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AUTHOR	Daugherty, Ronald D.; And Others
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ABSTRACT

This final volume of a four-volume study considers the need for personnel for traffic control, police traffic services, pedestrian safety, school bus safety, and debris hazard control and cleanup. Training requirements to meet national objectives are discussed, in terms of curriculum, staffing, student recruitment, facilities, equipment and enrollment. Course outlines are appended. This volume is one of a series on highway safety activities available as VT 013 312-013 315 in this issue. (BH)

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EXPANSION OF VOCATIONAL-TECHNICAL PROGRAMS TO ACCOMMODATE HIGHWAY SAFETY MANPOWER REQUIREMENTS

Volume IV

VT 013315

THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION
THE OHIO STATE UNIVERSITY

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EXPANSION OF VOCATIONAL-TECHNICAL SCHOOL PROGRAMS TO ACCOMMODATE HIGHWAY SAFETY MANPOWER REQUIREMENTS

VOLUME IV

DIRECTIONS

This is Volume IV of four volumes. Please read each section carefully. After reading the volume please complete and return the enclosed evaluation form. This form will be found on the last two pages of the unit.

Expansion of Vocational-Technical School Programs to Accommodate Highway Safety Manpower Requirements

Volume IV

Ronald D. Daugherty
W. Kent Brooks
Carroll R. Hyder

The Center for Vocational and Technical Education
The Ohio State University

Columbus, Ohio

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TRAFFIC CONTROL DEVICES

I. INTRODUCTION

Traffic control devices (signs, signals, markings) are intended to minimize motor vehicle accidents, improve traffic flow, increase highway and street capacities, and otherwise create a better traffic environment. The sizes, shapes, and kinds of devices, and the location of these devices are generally the result of applied highway engineering knowledge. Research studies show that the type and form of traffic control devices has an influence on highway safety.

Traffic control devices convey the myriad of traffic regulations which govern motor vehicle operation. Some indicate correct procedures at intersections and terminal points, or upon approaching hazardous highway and street locations. Still others aid drivers to particular highways, street entrances or exits.

Reaction to traffic control devices depends upon the driver, his vehicle and to a certain extent upon weather conditions and time. The ability to see, hear, interpret and react to traffic control devices differs with each driver and each driver's reactions may vary at different times of day. Vehicles which each driver operates though similar in construction or conceivably built from the same assembly line, may exhibit different rates of acceleration and deceleration and handle differently in traffic. Differences in roadway surfaces, in weather, in variances in light and darkness and in hours of heavy vehicle congestion affect the degree of adherence and obedience to control devices on the highway.

Federal, state and local public officials recognize needed improvement in highway and street traffic control. One step in this direction is *Highway Safety Program Standard 13: Traffic Control Devices*, which stipulates that control devices on all streets and highways shall be uniform in design and application.

The Standard calls for each state to upgrade existing traffic control devices and when it is deemed necessary through engineering studies, replace existing devices with new ones that conform with standards for excellence. Further, each state is expected to develop a program of inspection, maintenance and repair of traffic control devices.

Speed zones are to be established within each state according to latest engineering and traffic studies. Efforts are to be made to lessen misinterpretations of traffic control signals by operators and pedestrians; to bring about greater conformity and continuity in signs; to reevaluate time sequences in driver-reaction to roadway markings; to reconcile informational messages on roadways with similar information on maps, tour guides and advertisements.

Such activities, if fully realized would undoubtedly mean the employment of additional safety specialists in highway, traffic and engineering departments across the nation.

II. GENERAL PROGRAM BACKGROUND AND CONSIDERATIONS

Two occupational positions in which non-B.S. degree personnel implement the Standard for Traffic Control Devices have been cited. These are traffic engineering aide and traffic control device technician.

The same positions may exist as different jobs in different states. Traffic control device technician is also known as engineering aide, signal technician, traffic technician, electrician and a host of other titles. Traffic engineering aide may be traffic planning engineer in one state and engineering technician, survey engineering aide and highway technician in others.

There is no synchronization of job classifications on national, state and local levels, nor are job descriptions distinct. Overlapping is common. Large counties and municipalities may rely on a public works department with specialists in traffic control devices. In some jurisdictions highway construction or maintenance crews have the major responsibility for implementing the Standard for Traffic Control Devices. In still other counties traffic engineers coordinate and supervise the work of traffic control device personnel.

One hopeful note is the increase in efforts to correlate jobs with job descriptions. Since the promulgation of the Highway Safety Standard for Traffic Control Devices, there has been greater effort on the part of the states and the federal government to relook at what is required in each occupation, how each might be distinctly termed and what programs might be developed to train each type of highway safety specialists.

A. OCCUPATIONAL SUMMARIES

The occupational summaries in the following two paragraphs may bring the duties and responsibilities of the traffic engineering aide and the traffic control device technician into focus.

1. TRAFFIC ENGINEERING AIDE

The traffic engineering aide works under the direct supervision of the traffic engineer and may be involved in the following activities: installing equipment used in obtaining traffic data; collecting traffic data (on court cases, parking accumulation rates, accident frequencies at intersections, etc.); computing traffic signal timing; studying traffic demands; observing traffic control device operations to determine their effectiveness; determining appropriate types and application of

control devices; drawing geometric designs and sketches of highway markings; preparing recommendations for the design, construction/installation and maintenance of traffic control devices; and acting as a liaison with police traffic services and other local and state highway safety units in implementing the Standard for Traffic Control Devices.

2. TRAFFIC CONTROL DEVICE TECHNICIAN

The traffic control device technician may work under the supervision of the traffic engineer or the traffic engineering aide. He may be involved in the following activities: applying new developments in traffic control; installing, testing, and maintaining traffic control devices; placing signal lights, speed-limit signs, center lines, stop signs, etc.; diagnosing electrical and mechanical malfunctions of electrical-electronic traffic control devices; designing and constructing non-electrical traffic control devices in accordance with state and local laws and regulations; and supervising craftsmen and laborers.

B. MANPOWER REQUIREMENTS

Booz-Allen and Hamilton also list manpower requirements for two occupations relating to the Standard for Traffic Control Devices. These vary slightly. They are: 1) engineering aide--traffic, and 2) traffic control device technician. Estimates from 50 states of requirements for each occupation, at the state level, are shown in Tables 1 and 2.

There have been a number of estimates of the shortage of traffic engineers and technicians in the United States. In 1963, over 7,000 traffic engineers were employed in the United States (by state and local highway and engineering departments, consulting firms and private organizations) with a known need of 1,400 more, according to a survey conducted by the Institute of Traffic Engineers. Other estimates since 1963 indicate an alarming increase in demand for both engineers and technicians. (Manpower estimates generally concur on the accepted need of three technicians for every practicing professional engineer.)[1]

Koert (1969) reported that the shortage of traffic engineering technicians is even more critical than the shortage of traffic engineers; that relatively few training programs exist for traffic

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[1] Institute of Traffic Engineers, *A Career in Traffic Engineering* (Washington, D.C.: Institute of Traffic Engineers, n.d.), p. 1.

TABLE 1

ENGINEERING AIDE--TRAFFIC[2]

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
States Estimate	202	238	270	279	287	287	298	306	316	316
Alternative 1 (Maximum)	2,080	2,084	2,111	2,122	2,139	2,154	2,169	2,188	2,198	2,222
Alternative 2 (Minimum)	495	495	495	496	497	505	510	515	519	527

TABLE 2

TRAFFIC CONTROL DEVICE TECHNICIAN[3]

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
States Estimate	358	396	425	433	447	453	462	475	475	475
Alternative 1 (Maximum)	1,246	1,269	1,277	1,288	1,319	1,336	1,344	1,352	1,365	1,375
Alternative 2 (Minimum)	506	506	508	510	511	516	520	522	528	535

[2]Booz-Allen and Hamilton, Inc., *Safety Specialist Manpower*, Vol. I (Washington, D.C.: Booz-Allen and Hamilton, Inc., 1968), Appendix E.

[3]*Ibid.*

TABLE 3

TRAFFIC ENGINEERING SPECIALISTS[4]

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
National Estimate	2,272	2,353	2,437	2,524	2,614	2,708	2,804	2,904	3,007	3,115
Alternative 1	1,619	1,813	2,031	2,275	2,548	2,854	3,196	3,580	4,010	4,491
Alternative 2	1,619	1,813	2,031	2,275	2,548	2,854	3,196	3,580	4,010	4,491

TABLE 4

TRAFFIC CONTROL DEVICE TECHNICIAN[5]

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
National Estimate	2,272	2,353	2,437	2,524	2,614	2,708	2,804	2,904	3,007	3,115
Alternative 1	1,619	1,813	2,031	2,275	2,548	2,854	3,196	3,580	4,010	4,491
Alternative 2	1,619	1,813	2,031	2,275	2,548	2,854	3,196	3,580	4,010	4,491

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[4]National Association of Counties Research Foundation, *Safety Manpower Survey of Local Governments in the United States* (Washington, D.C.: National Association of Counties Research Foundation, n.d.), p. E-14.

[5]*Ibid.*

engineers; and that ". . . Engineers hire whatever personnel they can obtain and attempt to bridge the educational deficiencies with in-service training."[6]

C. PRESENT NUMBER OF STUDENTS ENROLLED IN PROGRAMS AND COURSES

According to the instructional program enrollment summary compiled by the U.S. Office of Education, a total of 13,885 students were enrolled in civil and highway technology programs in public educational institutions across the nation during the fiscal year 1969. Most were enrolled in post-secondary education programs.[7]

Civil and highway instructional programs in U.S. education are not necessarily traffic engineering oriented. Most provide limited instruction in aspects of traffic engineering technology.

Many programs in electrical-electronics technology provide instruction in traffic control devices. The U.S. Office of Education reported 14,000 students enrolled in electrical technology and 74,900 students enrolled in electronic technology during fiscal year 1969.[8]

D. RECRUITMENT

Perhaps efforts should be directed toward preparing persons in public and private highway planning, construction, and maintenance departments for advancement to traffic control devices. It is the authors' opinion that recruiting efforts could be enhanced if programs of instruction provide options; e.g., one year certificate, associate degree, electrical-electronic control device specialist, or non-electrical traffic control device specialist.

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[6]Adrian H. Koert, *Traffic Engineering Technician Programs in the Community College* (Washington, D.C.: American Association of Junior Colleges, 1969), p. 2.

[7]U.S. Department of Health, Education and Welfare, Office of Education; Computer Print-out, Instructional Program Summary, Fiscal-year 1969 (Washington, D.C.: U.S. Office of Education, Planning and Evaluation Branch, 1969).

[8]*Ibid.*

III. PROGRAM CURRICULA

Koert (1969) has outlined the work and educational requirements of the traffic engineering technician.

> The traffic engineering technician is concerned with more repetitive tasks involving data collection, the analysis of data, and the preparation of tentative recommendations for the correction of problem locations in the roadway system. Specific tasks to be performed include the following:

1. Surveillance of existing traffic
2. Study of problem locations
3. Geometric design of streets and intersections
4. Channelization studies
5. Timing of traffic signals to coordinate flow
6. Planning of traffic signal installations, operations, and maintenance
7. Study of school and pedestrian crossings
8. Planning of sign and street marking programs
9. Planning of safe school bus routes
10. Surveys of parking and traffic requirements of retail shopping centers
11. Collecting traffic data involving: volume; speed; origin and destination; parking supply and demand; traffic accidents; and lighting levels.

To accomplish these and related tasks the traffic engineering technicians must learn certain concepts and skills. The most important of these are as follows:

1. Communication skills (oral and written)
2. A knowledge of the driver, roadway and vehicle characteristics and an understanding of physical laws as they relate to the driver, roadway and vehicle
3. The ability to extract design information from manuals and apply it to specified problems
4. A knowledge of data collection methods, tabulation and analysis
5. A knowledge of the operation and maintenance of traffic control devices and equipment
6. The ability to prepare sketches, engineering drawings and to use graphics for illustrative purposes
7. A knowledge of highway capacity analysis
8. The basic principles of traffic and highway engineering

9. An appreciation of the general concepts and principles of related fields--particularly urban planning and police traffic supervision.[9]

Training programs for traffic control device technicians may encompass many subject elements not directly related to highway safety such as knowledge and skills in electricity-electronics, and mechanics (as they relate to traffic control devices). Distinct programs of instruction may be required for training in the non-electrical (non-electrical signing and marking) aspects of traffic control devices, and in training in the electrical aspects of traffic control devices.

Koert (1969) developed a basic, flexible curriculum for a two-year program in traffic engineering technology, presented in Exhibit A in the appendix. Koert suggests that local traffic characteristics, student characteristics, and existing training programs be considered in programs for training traffic engineering technicians. The curriculum shown in Exhibit A includes technical, basic science and nontechnical courses. A careful study must be made of local employment needs, available resources and potential students (logically with the assistance of a local advisory committee) to determine if major subject elements are appropriate and meaningful.

Booz-Allen and Hamilton (1968) and the Stanford Research Institute (1969) attempted to determine the entry and refresher training needed by traffic engineering aides and traffic control device technicians. Segments of these works are in the appendix in Exhibits B, C, D, and E.

An outline of subject elements, which were extracted from a course guide for planning and conducting training activities for employed highway technicians is presented in Exhibit F. This outline includes knowledges and skills needed by traffic engineering aides charged with assisting in implementing the Highway Safety Standard for Traffic Control Devices.

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[9]Adrian H. Koert, *Traffic Engineering Technician Programs in the Community College* (Washington, D.C.: American Association of Junior Colleges, 1969), p. 3.

IV. CONCLUSIONS

The following conclusions have been drawn from this unit:

A. The proper design, installations/construction and maintenance of traffic control devices minimizes motor vehicle accidents, improves traffic flow and increases highway and street efficiency. There is an increasing need to identify elements of design and operations on highway and street facilities which could be improved to increase safety and efficiency of traffic services. To realize the goals set in the Highway Safety Standards for Traffic Control Devices, it is important that improved engineering, technological developments in traffic signing, signaling and marking be applied to highway and street systems as rapidly as possible.

B. Full realization of these goals may mean the employment of additional safety specialists at the state and local levels.

C. Job descriptions often do not clearly distinguish between traffic engineering technician (traffic control devices) and highway engineering technician (highway design, construction, and maintenance). The placing of prime responsibility for the realization of the Highway Safety Standard for Traffic Control Devices varies across the nation by community.

D. The greatest employment of traffic engineering technicians is in larger urban areas which have traffic engineering divisions (often within the public works departments).

E. Personnel installing and constructing traffic control devices (electricians, sign painters, installers, etc.) frequently are employed by highway maintenance departments and work under supervision of an engineer. However, these personnel most likely are not highway safety specialists.

F. Existing programs of instruction in civil and highway technology frequently encompass instruction in traffic control devices and may be the most logical departure points for expansion of training activities in traffic engineering technology. Greater specialization may be possible as these programs expand.

G. Existing programs of instruction in electrical and/or electronic technology may be departure points for expanded training in traffic control device technology.

H. The design, construction, and maintenance of electrical and non-electrical aspects of traffic control devices require different knowledges and skills.

I. The duties and responsibilities of the traffic engineering aide, and particularly the traffic control device technician, must be more clearly described before curricula can be developed and programs of instruction established or expanded.

V. DISCUSSION-RESEARCH TOPICS

The findings of this report raise a number of questions. It is the authors' hope that each of the following may be considered as discussion-research topics by interested persons or groups.

A. What percentage of time do traffic engineering aides normally devote to implementing the Standard in each state? Should traffic engineering specialists be trained to devote full-time to traffic control devices?

B. What agencies should be responsible for enforcing the Standard for Traffic Control Devices at the state level? What agencies should be responsible for implementing the Standard at the local level?

C. Is it feasible for communities with populations less than 50,000 to employ traffic engineering aides? How much time could traffic engineering aides in these communities devote to traffic control devices?

D. What knowledge and skills which relate specifically to highway safety are needed by traffic control device technicians?

E. Can existing programs of instruction in civil and highway technology be expanded to include instruction in traffic control devices? What are the problems associated with expanding these programs?

F. Can existing programs of instruction in electrical and/or electronic technology be expanded to include instruction in traffic control devices? What are the problems associated with expanding these programs?

G. Are separate specialty programs needed for training in the electrical-electronics and non-electrical aspects of traffic control devices?

H. What strategies can be applied in determining more clearly what traffic engineering aides and the traffic control device technicians need to know?

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APPENDICES

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EXHIBIT A

TRAFFIC ENGINEERING TECHNOLOGY CURRICULUM*

FIRST YEAR

FIRST SEMESTER — Course Title	Class Hours	Lab Hours	Semester Credit
Introduction to traffic engineering	1	3	2
Engineering drawing	1	6	3
Technical mathematics I	4	0	4
Technical physics I	3	3	4
Communication skills	3	0	3
Physical education	0	2	1
	12	14	17

SECOND SEMESTER

Principles of traffic administration and safety	2	0	2
Graphics	1	6	3
Technical mathematics II	4	0	4
Technical physics II	3	3	4
Communication skills	3	0	3
Physical education	0	2	1
	13	11	17

*Adrian H. Koert, *Traffic Engineering Technician Programs in the Community College* (Washington, D.C.: American Association of Junior Colleges, 1969), pp. 20-21.

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EXHIBIT A (CON'T.)

TRAFFIC ENGINEERING TECHNOLOGY CURRICULUM

SECOND YEAR

THIRD SEMESTER — Course Title	Class Hours	Lab Hours	Semester Credit
Field traffic surveys	3	3	4
Control devices	3	0	3
Geometric design	3	3	4
Statistics	3	0	3
Social science (govt., soc.) elective	3	0	3
	15	6	17

FOURTH SEMESTER

Traffic studies	3	3	4
Traffic laws and regulations	3	0	3
Urban transportation planning	3	3	4
Data processing	2	3	3
Social science (govt., soc.) elective	3	0	3
	14	9	17
Totals	54	40	68

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EXHIBIT B

ENGINEERING AIDE--TRAFFIC*

Scope

Includes all technically trained aides to traffic engineers involved in the traffic control devices program.

Duties

Under supervision of a traffic engineer, aids in performing technical duties related to the traffic control devices program, such as evaluating the overall program, executing engineering studies, obtaining and maintaining inventories of traffic control devices, and determining hazardous conditions through road patrols.

Entering Education

High school graduate with courses in mathematics, or the equivalent.

Entering Experience

A minimum of three years experience in the technical activities of a state highway department, or the equivalent.

Special Training

- Upon appointment, a minimum of 40 hours training at the junior college level devoted to obtaining a general knowledge of the highway safety program and its impact upon traffic operations and traffic control devices.

- Upon appointment, if not previously obtained, a minimum of 80 hours training at the junior college level devoted to acquiring the skills required to perform technical duties in the areas of traffic operations and traffic control devices.

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*Extracted from *Safety Specialist Manpower*, Vol. I, Booz-Allen and Hamilton, Inc., 1968.

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A minimum of 24 hours in-service training annually in order to review previous training and to examine new developments within the highway safety program and traffic control devices.

EXHIBIT C

TRAFFIC CONTROL DEVICE TECHNICIAN*

Scope

Includes all state employed personnel and their supervisors technically qualified to install and maintain electrical and electronic traffic control devices.

Duties

Performs all requisite duties, including supervision, involved in the installation and maintenance of electronic traffic control devices.

Entering Education

High school graduate and two years of technical school training in electricity and electronics, or the equivalent.

Entering Experience

At least two years experience in electricity, one year experience in electronics, or the equivalent.

Special Training

- Upon appointment, a minimum of 40 hours training devoted to obtaining a general knowledge of the highway safety program and its relation to traffic operations and traffic control devices.
- A minimum of 24 hours in-service training annually in order to review previous training and to examine new developments within the highway safety program and traffic control devices.

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*Extracted from *Safety Specialist Manpower*, Vol. I, Booz-Allen and Hamilton, Inc., 1968.

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EXHIBIT D

ENGINEERING AIDE--TRAFFIC*

Entry Training		Refresher Training		Percent of Total Training Hours by Discipline	
Course Description	No. of Hours	Course Description	No. of Hours	Public or Bus. Admin.	Engineering
A. General Knowledge of the Highway Safety Program.	10	A. A Review and Examination of New Developments within the Highway Safety Program and Traffic Control Devices.	24 YR.	8	92
B. The Impact of the Highway Safety Program on Traffic Operations Activities and Traffic Control Devices.	30				
C. The Technical Duties in the Areas of Traffic Operations and Traffic Control Devices as Related to Highway Safety.	80				

*Selected from *The Feasibility of Establishing Highway Safety Manpower Development and Research Centers at University Level Institutions*, Vol. I, Stanford Research Institute, 1969, p. 13.

EXHIBIT E

TRAFFIC CONTROL DEVICE TECHNICIAN*

Entry Training		Refresher Training		Percent of Total Training Hours by Discipline	
Course Description	No. of Hours	Course Description	No. of Hours	Public or Bus. Admin.	Engineering
A. General Knowledge of the Highway Safety Program.	10	A. A Review and Examination of New Developments within the Highway Safety Program and Traffic Control Devices.	24 YR.	25	75
B. The Relating of the Highway Safety Program to Traffic Operations and Traffic Control Devices.	30				

*Selected from *The Feasibility of Establishing Highway Safety Manpower Development and Research Centers at University Level Institutions*, Vol. I, Stanford Research Institute, 1969, p. 13.

EXHIBIT F

ELEMENTS OF HIGHWAY PLANNING*

UNIT 1: FUNDAMENTALS OF HIGHWAY PLANNING

TRAINING TIME:

REFERENCES

Hay, W. W. *Introduction to Transportation Engineering*. New York: John Wiley, 1961.

Matson, T. M.; Smith, W. S.; and Hurd, S. W. *Traffic Engineering*. New York: McGraw-Hill, 1955.

United States Federal Aid Highway Act of 1962, Public Law 87-866, Section 134.

Woods, K. B. *Highway Engineering Handbook*. New York: McGraw-Hill, 1960.

OBJECTIVES

1. To acquaint the student with the basic concept of highway planning as a science.

2. To show the relationship between highway planning and comprehensive planning for an area.

UNIT OUTLINE

I. Determining Needs for New or Improved Roads
   - A. Inventory of roads
   - B. Studies of traffic volume and classification of roads
   - C. Traffic analyses
     1. Average annual daily traffic (AADT)
     2. Design Hour (DH)
   - D. Traffic forecasting
   - E. Geometrics

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*Taken largely from *Program for Highway Technicians: Unit IV, Elements of Highway Planning*, The New York State Education Department, Albany, New York, 1969, pp. I-106.

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II. Determining Location of Roads
    A. Mapping
    B. Origin and destination studies
    C. Economic analysis
    D. Route location

III. The Relation of Highway Planning to Other Types of Planning
    A. Community planning
        1. Planning board
        2. Planning staff
        3. Duties
        4. Coordination
    B. Regional planning
        1. By public agency
        2. By a quasi-public agency

SUGGESTED STUDENT PRACTICES:

UNIT 2: STATE HIGHWAY AGENCIES AND SYSTEMS

TRAINING TIME:

REFERENCES

Hay, W. W. *Introduction to Transportation Engineering*. New York: John Wiley, 1961.

National Highway User's Conference. *Federal Aid for Highways*. Revised edition. Washington: National Highway User's Conference, 1959.

Woods, K. B. *Highway Engineering Handbook*. New York: McGraw-Hill, 1960.

OBJECTIVES

1. To acquaint the students with the various highway agencies and systems.

2. To show why planning for state highways should be coordinated with planning with other highway systems.

UNIT OUTLINE

I. State Highway Agencies
   A. Public agencies
      1. State Department of Transportation
      2. State Highway Department
      3. United States Department of Transportation
      4. County agencies
      5. Township agencies
      6. Municipality agencies
   B. Quasi-public agencies (transit authorities, etc.)

II. State Highway Systems
   A. Highways receiving federal aid
      1. Primary highways
      2. Secondary highways
         a. State
         b. County
   B. Special kinds of primary highways
      1. Interstate
      2. Arterials
      3. Expressways
      4. Parkways

C. Highways not receiving federal aid
    1. State system
    2. County system
    3. Town roads
    4. City and village streets
D. Quasi-public highways

III. Coordination Among Highway Agencies

SUGGESTED STUDENT PRACTICES:

UNIT 3: ROAD INVENTORY AND FIELD SCORING

TRAINING TIME:

REFERENCES

Highway Research Board. *Highway Capacity Manual*. Washington: The Highway Research Board, 1965.

Woods, K. B. *Highway Engineering Handbook*. New York: McGraw-Hill, 1960.

OBJECTIVES

1. To acquaint students with the elements of road inventory and field scoring.
2. To fit the inventory and field scoring into the highway planning process.

UNIT OUTLINE

I. Inventory of Roads
   A. Elements of the inventory
      1. Length of roads
      2. Width of roads
      3. Type of paving
      4. Development of surrounding areas
   B. Use of inventory data
      1. For highway planning
      2. As a basis for allocating aid to towns and counties

II. Field Scoring
   A. Surface and structural condition
   B. Maintenance condition
   C. Relation of volume to capacity

III. Sufficiency Ratings
   A. Averaging field scores
   B. Index and number
   C. Engineering judgement

SUGGESTED STUDENT PRACTICES:

UNIT 4: TRAFFIC STUDIES

TRAINING TIME:

REFERENCES

American Association of State Highway Officials. *A Policy on Geometric Design of Rural Highways*. Washington, D.C.: The American Association of State Highway Officials, 1966.

OBJECTIVES

1. To acquaint the students with four types of traffic survey studies forming the basis for highway design.

2. To show how each survey serves a specific purpose in highway planning for smaller areas.

UNIT OUTLINE

I. Volume Counts of Traffic
   A. Machine method
      1. Fixed detectors
      2. Portable detectors
      3. Printed tape recorders
      4. Punched-tape recorders
      5. Computer control
   B. Manual methods

II. Origin and Destination Surveys
   A. Roadside interview
      1. Spot survey
      2. Survey screen
      3. Cordon around area
   B. Other origins and destination surveys

III. Classification Counts
   A. Comprehensive data collection
   B. Short-term count

IV. Turning Count

V. Uses of Traffic Surveys

SUGGESTED STUDENT PRACTICES:

UNIT 5: TRAFFIC ANALYSIS

TRAINING TIME:

REFERENCES

Matson, T. M.; Smith, W. S.; and Hurd, S. W. *Traffic Engineering*. New York: McGraw-Hill, 1955.

Winch, D. M. *Economics of Highway Planning*. Toronto, Canada: University of Toronto Press, 1963.

OBJECTIVES

1. To show the major steps in making a simple traffic analysis for a small-area study.

2. To show how an analysis is used in highway planning for such an area.

UNIT OUTLINE

I. Analysis of Traffic Flow
   A. Average annual daily flow of traffic (AADT)
      1. Continuous count
      2. Short count
   B. Design Hour (DH)
      1. With a continuous count
      2. With a short count
   C. Composition of traffic
      1. Equivalent traffic count
      2. Effect on road design

II. Analysis of Travel Characteristics
   A. Origin and destination (OND surveys)
      1. Traffic through
      2. Local traffic
   B. Assignment of traffic through bypass
      1. Diversion curve
      2. Variation from the curve

III. Application of Traffic Analysis
   A. Approving existing routes
   B. Planning the bypass

SUGGESTED STUDENT PRACTICES:

UNIT 6: TRAFFIC FORECASTING

TRAINING TIME:

REFERENCES

Automobile Manufacturer's Association. *Highways for the Future.* Detroit, Michigan: Automobile Manufacturer's Association, 1961.

Hay, W. W. *Introduction to Transportation Engineering.* New York: John Wiley, 1961.

Woods, K. B. *Highway Engineering Handbook.* New York: McGraw-Hill, 1960.

OBJECTIVES

1. To acquaint the students with the procedures for making traffic forecasting for road networks in small areas.

2. To show how traffic forecasts, as developed through this course, are used in highway planning.

UNIT OUTLINE

I. Principles of Traffic Forecasting
   - A. Selection of forecast period
     1. Ten-year forecast
     2. Twenty-year forecast
     3. Thirty-year forecast
     4. Forecast for a longer period
   - B. Obtaining traffic figures for the base year
     1. Declining trend
        - a. Estimating the traffic
        - b. Analyzing decline
        - c. Overall study needed
     2. Static trend
     3. Upward trend
   - C. Extension factors influencing forecast
     1. Normal traffic
     2. Generated traffic
     3. Development traffic
   - D. Computation for forecasting

II. Uses of Traffic Forecasts

SUGGESTED STUDENT PRACTICES:

13-38

UNIT 7: HIGHWAY SAFETY

TRAINING TIME:

REFERENCES

Hay, W. W. *Introduction to Transportation Engineering*. New York: John Wiley, 1961.

Matson, T. M.; Smith, W. S.; and Hurd, F. W. *Traffic Engineering*. New York: McGraw-Hill, 1955.

New York State Traffic Control Commission. *Manual of Uniform Traffic Control Devices*. Albany, New York: The New York State Traffic Control Commission, 1967.

United States Congress. *United States Highway Safety Act of 1966*. Public Law 89-564. Section 402. Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, 1966.

United States Department of Transportation. Bureau of Public Roads. *Bureau of Public Roads Policy and Procedure Memorandum 21-16*, Transmittal 44. Washington, D.C.: United States Department of Transportation, 1965.

Winch, D. M. *Economics of Highway Planning*. Toronto, Canada: University of Toronto Press, 1963.

Woods, K. B. *Highway Engineering Handbook*. New York: McGraw-Hill, 1960.

OBJECTIVES

1. To acquaint the students with federal and state programs for highway safety.

2. To acquaint the class with the Department of Transportation procedures for implementing the state safety program.

3. To inform the students of safety measures such as pavement striping, signing, signals, and others.

UNIT OUTLINE

I. Accent on Safety
   A. The federal safety program

B. The state program for highway safety

II. The Department of Transportation Safety Crusade
   A. Updating safety standards
   B. Spot improvements of unsafe conditions

III. Standard Safety Measures
   A. Road markings
   B. Signs for safety
   C. Traffic signals and devices

SUGGESTED STUDENT PRACTICES:

EXHIBIT G

TRAFFIC ENGINEERING*

COURSE TOPICAL OUTLINE: GENERAL

Lecture	Lab	Topic	
3	1	1.	Driver and Vehicle Characteristics affecting Highway Design, Control, and Safety.
6	2	2.	Probability and Statistical Methods in analyzing traffic stream or flow, characteristics affecting Highway Planning, Design, Control, and Safety.
6	2	3.	Traffic Planning--Systems, Surveys, and Parameters used in Capacity Analysis of existing and proposed facilities.
9	3	4.	Geometric Design--the effects of the above studied traffic characteristics on the Plane Geometry, Vertical and Horizontal Alignment design of proposed facilities.
6	2	5.	Traffic Control--the elements of, warrants for, design and use of traffic control devices such as signs, delineations, and signals, to promote efficient operation of existing traffic.
30	10		

*Selected from "Highway Construction Technology Curriculum," Ferris State College, Big Rapids, Michigan, 1967.

COURSE TOPICAL OUTLINE: DETAILED

I. Driver and Vehicle Characteristics Affecting Highway Design, Control, and Safety
   A. Driver characteristics
      1. Attention
      2. Standardization and reflex action
      3. PIEV
   B. Vehicle characteristics
      1. Dimensions
      2. Turning radii
      3. Stopping sight distance
      4. Horsepower-grade requirements

II. Probability and Statistical Methods in Analyzing Traffic Stream, or Flow, Characteristics Affecting Highway Planning, Design, Control, and Safety
   A. Volume characteristics
      1. Time-wise
         a. ADT--planning parameter
         b. DHV--design and control parameter
      2. Space-wise
      3. Otherwise
         a. Percent commercial--capacity and design factor
         b. Percent directional--capacity factor
   B. Arrival and headway distributions: actual statistical distributions relative to the theoretical poisson probability distribution (a study within the DHV)
   C. Speed--significance and methods of measurement
      1. Spot speed--design and control parameter
      2. Running speed--design parameter
      3. Overall speed--planning parameter
      4. Speed limit--control parameter
   D. Statistical speed distribution: their significance and relation to the normal probability distribution

III. Traffic Planning
   A. Functional systems
   B. Required surveys for system analysis
      1. Traffic count
      2. O-D surveys (trip purpose)
      3. Land use
   C. Projection of data parameters, i.e., ADT, DHV, percent commercial, percent directional, trip purposes
   D. Synthesis and proposals to existing system
   E. Capacity analysis
      1. Roadway sections
      2. Intersections

IV. Geometric Design
    A. Plane geometry for design vehicle
        1. Lane, shoulder, width, etc.
        2. C & C, E.M. turning radii
        3. Median strip width
        4. Deceleration and storage lane design
        5. Typical X-section
        6. Parking space requirements
    B. Vertical alignment
        1. Grades: uniformity, maximum, minimum
        2. Vertical curves
        3. Sight distance
    C. Horizontal
        1. Degree of curvature
        2. Required superelevation
        3. Superelevation transition

V. Traffic Control
    A. Signs
        1. Elements of signing
        2. Types or functions of signing
        3. Stop sign warrants
        4. Pedestrians and signing
    B. Delineation and channelization
    C. Signals
        1. Elements of signal control
        2. Cycle length
        3. Caution phase calculation
        4. Theory of total delay by cycle length
        5. Phasing of a traffic signal cycle
        6. Pedestrian warrants on traffic signals
        7. Coordination of traffic signals

COURSE LABORATORY OUTLINE: GENERAL

Lab	
1	Measurement and calculation of basic driver and vehicle properties--vehicle dimensions, stopping sight distance, horsepower--grade requirements.
2	Statistical distribution of traffic stream; poisson arrivals and headways, percent commercial, and percent directional distributions.
3	Statistical distribution of spot speed and analysis with reference to the "normal probability distribution curve."
4	Analysis of plane geometry requirements for design vehicle.
5	Horizontal alignment--degree of curvature, superelevation and its transition.
6	Vertical alignment--grades, vertical curves, and sight distance requirements.
7	Analysis of signalized intersection--cycle length, phase lengths, exiting arrivals, calculation of DHV situation, pedestrian requirements.
8	Redesign and proposal for cycle length and phasing for above, Lab 7, signalized intersection situation.

PEDESTRIAN SAFETY

I. INTRODUCTION

In spite of efforts to curb the upswing, the number of pedestrian fatalities on U.S. highways appears to be on the rise again. This is partly due to increasing urban growth, mounting motor vehicle registrations and increase of motor vehicle travel where large concentrations of people (pedestrians) work and play.

During the early days of motor vehicle travel, the pedestrian seemed a forgotten man in traffic planning and traffic control. In 1937, four of 10 persons killed in traffic were pedestrians. In the urban areas the figure was a stunning eight of 10. All laws and traffic regulations were primarily concerned with the needs of the driver and his motor vehicle. Since that period alert groups and individuals have become increasingly interested in pedestrian safety programs and the implementation of traffic laws, and highway and street standards relative to the pedestrian. Many communities developed outstanding pedestrian safety programs. Annual pedestrian fatalities were actually reduced from 16,000 in 1947 to 8,000 in 1959.[1]

The figure began to climb, however, in the late 1960's. Approximately 2,500 youngsters under 15 years of age are killed in pedestrian accidents each year in the United States. Over 80,000 are injured. Adults over 65 years of age account for 2,500 pedestrian fatalities and 11,000 pedestrian injuries each year.[2]

Highway Safety Program Standard 14: Pedestrian Safety, emphasizes:

> . . . the need to recognize pedestrian safety as an integral, constant and important element in community planning and all aspects of highway transportation

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[1]American Automobile Association, *First Steps for a Community Safety Program* (Washington, D.C.: American Automobile Association, n.d.), p. 1.

[2]American Automobile Association, *Older Adult Pedestrian Safety* (Washington, D.C.: American Automobile Association, 1965), p. 3.

and to insure a continuing program to improve such safety by each state and its political subdivisions.[3]

The Standard calls for states to: 1) analyze all pedestrian accidents to determine who was involved, the age of the person, and the nature of the injury and the contributory factor(s) (pedestrian, roadway, and vehicle); 2) apply traffic engineering practices to separate pedestrian traffic from motor vehicle flow, e.g., by means of traffic control devices, footbridges, tunnels, sidewalks, barriers, and supervised crossings and intersections; 3) develop pedestrian safety education programs for youth and adults; 4) develop programs for establishing and enforcing traffic regulations designed to achieve orderly pedestrian and vehicle movement and to reduce vehicle-pedestrian conflicts.

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[3]U.S. Department of Transportation, National Highway Safety Bureau, *Highway Safety Program Standard 14: Pedestrian Safety* (Washington, D.C.: U.S. Department of Transportation, National Highway Safety Bureau, November, 1968).

II. GENERAL PROGRAM BACKGROUND AND CONSIDERATIONS

A. OCCUPATIONAL SUMMARIES

The Standard for Pedestrian Safety has implications for several highway safety areas, including police traffic services, driver education, traffic engineering, emergency medical services and highway design, construction, and maintenance. These areas encompass several occupations, including the crossing guard, traffic engineering aide, and driver education instructor and driver education instructor's aide. The following summaries are indicative of the range of pedestrian safety duties and responsibilities required of personnel in these occupations.

1. CROSSING GUARD

Crossing guards are responsible for the following activities: directing traffic while pedestrians cross streets and highways; assisting children, and handicapped, and aged persons to cross streets and highways; assisting pedestrians who have been injured in accidents; recording information on the nature and causes of pedestrian accidents; working with personnel in traffic engineering departments to determine how unsafe street crossings might be improved; and assisting in pedestrian safety education programs for youth and adults.

2. TRAFFIC ENGINEERING AIDE

Traffic engineering aides are responsible for collecting data concerning the what, when, where, who, and why of pedestrian accidents; analyzing data to determine the nature of pedestrian hazards, locations, and the times accidents are most likely to occur; assisting in developing drawings, specifications, and recommendations based upon pedestrian accident data; and participating in programs for pedestrian safety education for youth and adults.

3. DRIVER EDUCATION INSTRUCTORS AND INSTRUCTOR'S AIDES

Ideally, pedestrian safety education should begin at the elementary grades and exist for adults as well as youth. Driver education personnel are responsible for planning and teaching driver education to youth and adults. The tasks include: organizing, and sequencing instructional materials in pedestrian safety; planning special pedestrian safety programs for children, handicapped persons, and aged persons; serving on committees for pedestrian safety action; gathering local pedestrian accident data for presentation to groups; and conducting field trips for students to observe and practice pedestrian safety.

B. MANPOWER PRESENTLY EMPLOYED AND PROJECTIONS OF MANPOWER NEEDS

At the local level, many personnel will be needed in pedestrian safety programs to implement the Standard. Traffic engineering aides, highway engineering aides, accident site investigation aides, emergency medical technicians, and driver education instructors perhaps may be needed part-time and pedestrian safety program specialists, crossing guard supervisors, and crossing guards full-time.

The National Association of Counties Research Foundation estimates that 14,228 crossing guards alone were employed at the local level in 1969 to enforce the Standard for Pedestrian Safety. This number is expected to increase proportionately until 1978 when 19,513 crossing guards are needed.[4]

C. STUDENT ENROLLMENTS IN OCCUPATIONAL COURSES AND PROGRAMS

In the past, most state and local governments have not considered pedestrian safety as a separate program. Most occupational education in pedestrian safety has been conducted through highway patrol academies, police departments, driver instructor education programs, and engineering departments. To date, neither high schools or community-junior colleges have been extensively involved in training personnel for roles in pedestrian safety.

D. PLANNING COURSES AND PROGRAMS IN PEDESTRIAN SAFETY

Many public educational institutions currently have potential for providing occupational education in new and emerging safety areas. Plans are being considered in a few community-junior colleges, (already teaching such subjects as police science-law enforcement technology, highway and traffic engineering technology), to include pedestrian safety applications. New programs may be developed for training crossing guards, crossing guard supervisors and pedestrian safety program specialists.

The authors feel that all agencies responsible for pedestrian safety should be brought together to plan training programs and to preclude duplication of courses. Vocational planners should take

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[4]National Association of Counties Research Foundation, *Safety Manpower Survey of Local Governments in the United States* (Washington, D.C.: National Association of Counties Research Foundation, n.d.), p. E-6.

account of immediate needs and future expectations and provide flexibility in training to adjust to both. Pedestrian safety instructional activities should consist of entrance, refresher and advanced training.

An established procedure for setting up and expanding training programs is to secure local and state manpower data concerning pedestrian safety, establish needs, identify available resources, prepare proposals and present proposals with strong backing of public, quasi-public and private groups.

III. CURRICULA FOR TRAINING PEDESTRIAN SAFETY SPECIALIST MANPOWER

One of the fundamental, contributory factors in the success of training programs is quality curricula guides. These materials must contain the best of what is known and be flexible enough to permit new knowledge and skills emerging in the field. They must incorporate instructional goals, suggested teaching strategies, as well as essential knowledge and skills needed by the student learners. They should also provide information on the adequacy of the teaching-learning environment (space, equipment, supporting instructional materials and devices).

The occupational language, work processes and methods can be studied, forming a base from which to develop a "rough analysis" of the knowledge and skills required by the occupation. Persons employed in pedestrian safety may be selected to assist in writing job descriptions, arranging occupational subjects systematically into component parts (blocks), sequencing the manipulative tasks involved, and arranging information topics which contribute to the intelligent and economical practice of occupational tasks into logical order.

Materials relative to pedestrian safety are available on a piecemeal basis from several sources. Two sources, the National Safety Council and the American Automotive Association, have long been alert to the need for community action programs in pedestrian safety. Subsequently, they have produced numerous materials concerning the engineering, education, and enforcement aspects of pedestrian safety. Textbooks in the areas of traffic and highway engineering, police traffic supervision, police traffic law enforcement, and driver instructor education contain units relative to pedestrian safety. These are available from a number of commercial publishing houses. Such materials will assist curriculum developers in developing a working knowledge of the area of pedestrian safety.

IV. CONCLUSIONS

The following conclusions have been drawn from this unit:

A. If the present pedestrian casualty rate is to be reduced or stabilized, additional personnel are needed to work full-time in local pedestrian safety programs.

B. Pedestrian casualties are particularly acute for children under 15 years of age and adults over 65 years of age.

C. The scope of the Standard for Pedestrian Safety covers several occupational areas commonly classified under other highway safety standards.

D. Occupational education programs in the field of pedestrian safety will encompass one or more of the following elements: pedestrian education; organization, administration, and supervision of pedestrian safety programs; enforcement of traffic and pedestrian laws and ordinances; pedestrian accident records; traffic and highway engineering; and legislation relative to pedestrian safety. Subject components (blocks) pertinent to each of these elements are not clearly specified in current literature.

E. Vocational education planners will benefit from organizing pedestrian safety advisory committees to assist in developing training programs, and in gaining knowledge of community needs relative to training programs.

V. DISCUSSION-RESEARCH TOPICS

The findings of this study raise a number of questions. It is hoped that the following will be considered by interested groups and individuals:

A. What subjects related to pedestrian safety are taught or could be added in highway and traffic engineering technology programs?

B. What subjects related to pedestrian safety are taught or could be added in law enforcement, police-science occupational programs? How can these programs be expanded to provide more instruction in pedestrian safety?

C. What does the crossing guard need to know? How much training time is required? Should crossing guards be given law enforcement responsibilities? What agency is responsible for crossing guards?

D. Are pedestrian safety program specialists needed at the local, state, or national level? What should these persons know? How much time is needed for training?

REFERENCES

PEDESTRIAN SAFETY

Adult School Crossing Guards: A Guide to Selection, Training and Warrants for Operation. Washington, D.C.: American Automobile Association, n.d.

American Automobile Association. "A Generation of Effort Benefits Pedestrians." *Public Works*. Washington, D.C.: American Automobile Association, December, 1968.

_____. *First Steps for a Community Pedestrian Safety Program*. Washington, D.C.: American Automobile Association, n.d. 7 pp.

_____. *Manual on Pedestrian Safety*. Washington, D.C.: American Automobile Association, 1964. 172 pp.

_____. *Model Pedestrian Safety Program for Police Departments, Traffic Engineering Departments and Civic, Service and Safety Organizations*. Washington, D.C.: American Automobile Association, 1954. 36 pp.

_____. *Older Adult Pedestrian Safety*. Washington, D.C.: American Automobile Association, 1965. 15 pp.

_____. *Pedestrian Control Through Legislation and Enforcement*. Washington, D.C.: American Automobile Association, 1965. 16 pp.

_____. *The Young Pedestrian*. Washington, D.C.: American Automobile Association, 1965. 16 pp.

Booz-Allen and Hamilton, Inc. *Safety Specialist Manpower*. Vol. I. Washington, D.C.: Booz-Allen and Hamilton, Inc., 1968.

Highway Research Board. National Research Council. *Getting the Most from City Streets*. Washington, D.C.: Highway Research Board, National Research Council, n.d. 46 pp.

National Association of Counties Research Foundation. *Safety Manpower Survey of Local Governments in the United States*. Washington, D.C.: National Association of Counties Research Foundation, n.d.

State of Idaho. Department of Highways. *Pedestrian Accidents*. Boise, Idaho: Department of Highways, Planning and Traffic Division, 1970. 13 pp.

14-13

The Traffic Institute of Northwestern University. *Traffic Law Enforcement Series: Pedestrian Violations*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1961.

U.S. Department of Transportation. National Highway Safety Bureau. *Highway Safety Program Standard 14: Pedestrian Safety*. Washington, D.C.: U.S. Department of Transportation. National Highway Safety Bureau, November, 1968.

POLICE TRAFFIC SERVICES

I. INTRODUCTION

There is an unquestionable need to reduce deaths, injuries and loss of property by developing and maintaining more adequate police traffic services at the municipality, township, county and state governmental levels.

> A major element of traffic control is the police force, be it city, county, or state. Few, if any, jurisdictions have traffic police forces of adequate size and training. They must improve and expand; the policies and practices they enforce must be consistent, impartial, and uniformally applied to all street and highway users; and they must not be financially dependent upon a fee system or any other system, official or informal, related to the adjudication of court proceedings involving motor vehicle laws. Their records should be opened to the public.[1]

At the time of the passage of the Highway Safety Act of 1966, several states did not have uniform police training programs, particularly in police traffic services. Recently, states have passed legislation requiring a specified amount of preservice education, either before or after recruitment into law enforcement agencies. Minimum standards for training programs will no doubt be established in many states. The need for preservice and in-service training programs will be increasingly important in police traffic services as the states further develop programs compatible with the National Highway Safety Program goals.

Perhaps this means that more instructional programs and courses and associated training materials and resources are needed to prepare for traffic police roles as communications personnel, police traffic specialists, patrolmen, supervisors, coordinators, and officers. Such personnel are needed to help minimize accidents, to assist in post-accident procedures, and to bring those responsible for the accidents to justice. A variety of types of instructional activities are needed to provide the functional knowledges and skills needed by police traffic service personnel.

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[1]Report No. 1700, House of Representatives, 89th Congress, 2nd Session, July 15, 1966.

The U.S. Congress, in realization of the acute need for doing something about the highway traffic safety problem, passed the National Highway Safety Act in 1966. Shortly afterwards the National Highway Safety Bureau, a division of the new Department of Transportation was designated the agency responsible for developing standards for states to follow in implementing the National Highway Safety Program specified by the 1966 Act. The following excerpt from one of these standards relates to the police traffic services:

> Every state in cooperation with its political subdivisions shall have the program to insure efficient and effective police services utilizing traffic controls: to enforce traffic laws; to prevent accidents; to aide the injured; to document the particulars of individual accidents; to supervise accident cleanup and to restore safe and orderly traffic movement.[2]

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[2]U.S. Department of Transportation, Highway Safety Program Standard 15, 1968.

II. IDENTIFICATION AND CLASSIFICATION OF PROGRAMS AND OCCUPATIONS

The operational practices of police science-law enforcement agencies of the state, municipality, township and county levels are quite broad and varied. This has lead to a multitude of job titles, occupational terminology and other semantical problems for those attempting to plan, conduct and evaluate training programs in police science-law enforcement. The following analysis illustrates the wide range of occupational titles and shows the link between the state and local governments in services which relate to highway and street traffic, and the agencies responsible for identifying and classifying occupations for guidance, training and placement purposes.

TITLE VARIATIONS	U.S.OFFICE OF EDUCATION PROGRAM CLASSIFICATION	D.O.T. CLASSIFICATION
Policeman Patrolman Accident Investigation Officer Highway Patrolman State Trooper Patrolman, First Class Highway Patrol, Enlisted Man Corporal Sergeant Police Traffic Services Program Specialist Safety Promotion Officer Divisions Officer Division Patrolman	17.2802 Law Enforcement Training	375.138-010 Desk Officer 375.168-042 Pilot, Highway Patrol 375.168-050 Police, Lieutenant, Precinct 375.168-046 Police Captain, Precinct 375.168-054 Police Sergeant, Precinct I 375.168-062 Traffic Lieutenant 375.168-066 Traffic Sergeant 375.268-010 Accident Prevention-Squad Patrolman 375.268-030 Patrolman

TITLE VARIATIONS	U.S. OFFICE OF EDUCATION PROGRAM CLASSIFICATION	D.O.T. CLASSIFICATION
Trooper, First Class		375.268-042 Policewoman
Trooper, Second Class		375.268-046 State Highway Patrolman
		375.588-010 Parking Enforcement Officer

Numerous other titles not included herein may be found in the employment of local and state governments. Several less common titles such as captain, colonel, and lieutenant colonel, have not been listed, since the manpower needs appear to be less critical.

Vocational Education and Occupations, a code manual which was developed by the U.S. Office of Education as the official guide for use in establishing vocational and technical programs, includes the Law Enforcement training program under the Public Service category.

The program title, law enforcement, as well as the specified subject contents revealed in the manual were determined from existing state vocational and technical reports, available curriculum materials and through conferences with vocational education personnel among the states. The design of the manual is strongly oriented toward the *Dictionary of Occupational Titles*. New and emerging law enforcement-police occupations are not considered as such, but provisions are made for including these in a category entitled "Other Public Service Occupational Programs." Perhaps police traffic service programs could be classified in the latter category.

The program description given in *Vocational Education and Occupations*, is very broadly based and encompasses all law enforcement areas, including highway and traffic safety. However, the manual does not specify individual highway safety occupational programs.

There are other occupational titles given in the *Dictionary of Occupational Titles* that merit attention, at least from the standpoint of upgrading types of training in education. These include: desk officer, chief; commanding officer, investigation division; commanding officer, motor equipment; and commanding officer, motorcycle squad. Of course, these are not currently entry-level jobs in numerous departments but some attention must

be given to investigating and synthesizing materials that are available in these areas for upgrading programs. Community-junior colleges perhaps will become more involved in upgrading training in these areas.

III. GENERAL SUBJECT BACKGROUND AND CONSIDERATIONS

Much of the information and data presented in this section is based upon the findings of the questionnaire survey of law enforcement-police science programs in community-junior colleges. Fifty-seven program chairmen responded to this survey, which was conducted by The Center for Vocational and Technical Education, The Ohio State University. Also, research studies and other appropriate materials have been used as reference sources.

A. OCCUPATIONAL TARGETS OF THE POLICE TRAFFIC PROGRAM

The police traffic service program is aimed at several skill and responsibility levels. Both preparatory, or preservice, and in-service training must ultimately be considered. The nature of the instructional activities can further be characterized as in-service refresher short courses, in-service specialized courses, and the traditional "program" which is inclusive of a set of courses which may be geared toward preservice and/or in-service training, usually leading to an associate degree or a certificate. This study will be limited to occupational instructional activities in which the terminal goal is not a baccalaureate degree.

The delimitations of the project prohibited an in-depth, comprehensive study of training activities which relate to police traffic services conducted by state, municipality, township and county governmental agencies and institutions. The principal concern is to determine what efforts are currently underway, or are planned, by educational institutions within their vocational and technical programs, including Manpower Development and Training Agencies, to accommodate manpower training for personnel with specialized skills and knowledges in highway safety. An intensive effort has been made to identify programs and courses which have a significant degree of relevancy to highway safety and to determine the technical content of these instructional activities by reviewing, analyzing and synthesizing training materials and resources.

For the most part, efforts to identify educational programs specializing solely in police traffic services have been fruitless. Traditionally, programs offered through vocational and technical education streams have focused on preparing personnel for a multiple number of roles in law enforcement-police science. In fact, most programs are entitled "Law Enforcement" or "Police Science." Police traffic service content elements are usually a small, but significant, part of the total curriculum.

Personnel in police traffic services are employed by several governmental agencies, including state highway patrol departments, city police departments, county sheriff departments, and in

federal parks. They are also employed by public schools and by some private agencies.

There are numerous occupational titles to which the program relates. Generally, the previously mentioned titles are the most common. However, it must be stressed that the titles vary from agency to agency and from state to state. Moreover, the duties and responsibilities required of personnel in these positions are by no means consistent among the governmental agencies. This may account, at least in part, for the lack of any significant degree of standardization of police traffic related instructional activities offered by the various post-secondary educational institutions across the nation. This problem will be taken up in more detail throughout the course of this report.

It is clear that career ladders are inherent among the various positions that relate to police traffic services. In many departments persons cannot immediately enter certain positions. They must move "up the ladder." For example, the position traffic patrolman (noncommissioned) is likely to be an entry-level job. On the other hand, the traffic safety program specialist at both the state and local levels represents perhaps a number of practical on-the-job and educational experiences.

The occupational targets of a potential program in police traffic services are illustrated in Table I. The noncommissioned traffic patrolman is shown as an entry-level position. For example, a graduate of a post-secondary police traffic program may be initially employed at this level as a crossing guard supervisor. Through experience and demonstrated capacity to do police work a commission may be obtained. Then, through additional experience and/or training the officer may be promoted to the position as traffic safety specialist.

These are key occupations in terms of their importance to the police traffic control function, projected manpower needs and the potential capacity of post-secondary educational institutions to provide proper educational facilities and resources.

Office workers and other supportive personnel who are required to possess a significant degree of knowledge in highway safety might also be served through educational offerings in the police traffic services programs. Such offerings might particularly be pertinent to women seeking careers in police traffic service.

B. OCCUPATIONAL SUMMARIES

Occupations can be summarized best if they are specifically defined in terms of the level of skill and degree of responsibility assigned to the positions. Rather than attempting to summarize

TABLE I

POLICE TRAFFIC SERVICES PROGRAM

OCCUPATIONAL TARGETS

TRAFFIC PATROLMAN, COMMISSIONED (Experience and demonstrated ability required)	TRAFFIC SAFETY SPECIALIST (Experience, demonstrated ability, and additional training required)
TRAFFIC PATROLMAN, NONCOMMISSIONED (Entry-level requirement, basic training required)	

the many occupational titles for police traffic services that are found in state and local employment, the targeted occupations shown in Table I will be delineated. These are: traffic patrolman, noncommissioned; traffic patrolman, commissioned; and traffic safety program specialist. Some agencies employing police traffic personnel rank their personnel on some other basis than commissions, such as officer, first class, and officer, second class. The assumption will be made that these titles are encompassed in the above three classifications.

1. TRAFFIC PATROLMAN, NONCOMMISSIONED

Noncommissioned traffic patrolmen (patrolwomen, entry-level work) would include either personnel on foot, in an automobile, or on a motorcycle (daytime or nighttime) who maintain orderly traffic flow and enforce highway traffic and motor vehicle laws. Duties would include, but not be limited to, the following: handling congested traffic problems; directing traffic at pedestrian crossings; directing and re-routing traffic at scenes of accidents or construction sites; providing various kinds of services to traveling motorists; conducting routine driver licensing and motor vehicle inspection; conducting initial accident investigations to determine the seriousness of accidents, and determining the need for additional traffic safety services; serving as escorts for emergency vehicles, oversized loads; funerals, official or honorary occasions, and military convoys; issuing investigating parking violations; and investigating moving traffic violations.

The noncommissioned traffic patrolman would normally be assigned duties which would not be in conflict with his education and/or experience, but would provide support to commissioned traffic patrolmen and traffic safety program specialists and supervisors.

2. TRAFFIC PATROLMAN, COMMISSIONED

By virture of individual ability gained through experience and/or education and individual ability, the commissioned traffic patrolman would be assigned duties and responsibilities requiring more significant investigation, reporting, and presenting of accident information and data upon need. The duties might include: in-depth study of the positive factors in highway and street accidents; recognizing and reporting serious highway and street hazardous conditions; handling of emergency and hazardous situations; testifying in traffic courts; commanding and directing the work of certain units of noncommissioned patrolmen, such as post-accident cleanup; taking direct enforcement action in cases of violation of traffic laws; using speed measuring devices to enforce traffic laws; making medical inquests into the extent and the nature of accident injuries; apprehending and arresting drivers who commit traffic violations; and interrogating drivers and witnesses. (Police communication equipment and speed detection devices would be used in the course of their work.)

3. TRAFFIC SAFETY PROGRAM SPECIALIST

Traffic safety program specialists are required to possess greater knowledges and skills than noncommissioned traffic patrolmen and commissioned traffic patrolmen. "Representative duties include formulating operating programs, developing in-service training courses, supervising mobile patrol teams, and providing consultative service to political subdivisions."[3]

Knowledges and skills are needed in dealing with juvenile offenders, in helping to develop programs to reduce traffic offenses and in obtaining, maintaining, protecting and presenting accident evidence to be used in traffic courts. The traffic safety program specialist would also be instrumental in: assisting in the development of accident recording and reporting systems; helping to reduce violations of accidents; assisting in scheduling police traffic services; assisting in evaluating the schedule of police traffic services; assisting and developing job analysis of police traffic services, functions and activities for use in planning,

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[3]Booz-Allen and Hamilton, Inc., *Safety Specialist Manpower*, Vol. I, 1968.

developing and evaluating programs of instruction; assisting with training budgets for police traffic services; assisting in developing traffic rules and regulations for unusual or unexpected traffic conditions; assisting in establishing safe speeds for traffic safety; and assisting in eliminating conflicts at intersections and between intersections; assisting in allocating men and materials to traffic functions; and assisting in evaluation of the effectiveness of police traffic services.

Current operational practices of law enforcement agencies may include other areas of highway safety not delineated in the above summaries. For example, patrolmen and program specialists may be required to possess knowledges and skills to perform emergency medical services, deal with alcohol problems on highways, check motor vehicle registration, and to perform motor vehicle inspection procedures. Furthermore, they may be required to perform activities completely outside the field of highway safety both of the criminal and noncriminal nature.

There are increasing needs for professional police services to curb riots and disorders and to maintain surveillance over areas in which there is a danger of loss or damage to human life or property. Such activities may be required of the police traffic service personnel because of manpower shortages in such situations. There are numerous activities required of the local law enforcement agency that have only an indirect relationship to any of the processes of law.

The increasing demand for police and law enforcement services has a profound effect upon the manpower needs in the police traffic services area. Such demands have caused some neglect of highway and street patrol. The effectiveness of police traffic services must be increased through more professionalized training of personnel, the gainful employment of these persons and assignment of the professionally trained, and perhaps more specialized personnel to highway safety responsibilities.

Traditionally, police traffic service personnel employed by state agencies are most likely to be assigned specialized responsibility for traffic law enforcement, accident investigation, etc. They are unique traffic personnel in that they are assigned fewer responsibilities in criminology. The exception to the rule is when they are assigned other duties during civil disorders.

C. MANPOWER PRESENTLY EMPLOYED

Personnel responsible for police traffic services are charged with the responsibility of protecting life and property and preserving the peace. In many instances, this responsibility goes beyond the specialized field of police traffic safety. Therefore,

manpower figures are not usually given in terms of police traffic services personnel, but rather in terms of the broad field of law enforcement and police work.

It is estimated that more than 275,000 full-time policemen and policewomen were employed in 1967 by local government police departments. New York City alone had more than 28,000 police officers, and Chicago had more than 10,000 police officers (U.S. Department of Labor, *Occupational Outlook Handbook*, 1969). A majority of the policemen and policewomen are employed by the police departments of the major metropolitan areas. Approximately 15,000 openings for qualified police candidates occur each year. However, these numbers may be conservative numbers if the rapidly increasing demands for additional policemen and policewomen continue.

Booz-Allen and Hamilton, Inc., in 1968, reported a need for 84,279 state police traffic service patrolmen to assist in conducting a thorough highway traffic safety program. Total projected manpower needed for 1977 were estimated to be 91,429. These estimates are based upon field observations in states with advanced police traffic services programs and of the researcher's awareness of the implications of the National Highway Safety Bureau's National Highway Safety Program. The figures are also based upon the assumption that one patrolman is needed for every 25 miles of highway (one for every 125 miles in states with less than 20 inhabitants per square mile) and dedicated manpower.

The National Association of Counties (1970) conducted a survey of local government agencies and private organizations which implement highway safety program standards. The projected need for police traffic services specialist manpower was among the estimate figures. These figures are shown in Table II and represent total manning levels required for meeting the national highway safety standard for police traffic services.

Not only will additional police traffic personnel be needed, but training emphasis will need to be modified due to the many changes taking place in police methods and equipment. Specialists in the area of highway safety will be more critically needed as these changes occur. Sophisticated electronic equipment being used in conjunction with traffic control and data processing will require new knowledges and skills of police traffic personnel. Police traffic service personnel may become more heavily involved in assisting in the engineering and planning of traffic control. The complexity of the problems in dealing with all categories of people in police traffic "contact" work will require greater preparatory emphasis on sociology, psychology and socioeconomic relationships. Also, future requirements will be more intense for understanding Traffic Law. In order to become capable workers and to maintain professional standards, most police traffic service

TABLE II*

PROJECTED HIGHWAY SAFETY SPECIALIST MANPOWER NEEDS--LOCAL GOVERNMENTS

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Police Traffic Services Supervisor										
County	350	373	398	424	452	482	514	548	584	623
City	1308	1325	1342	1360	1378	1396	1414	1432	1451	1470
Township	51	52	53	54	55	56	57	58	59	60
Police Traffic Service Officer (Commissioned and Noncommissioned)										
County	2501	2667	2844	3033	3235	3450	3679	3924	4185	4463
City	15005	15200	15398	15598	15801	16006	16214	16425	16639	16855
Township	435	441	447	453	459	465	471	477	483	489
Police Traffic Service Specialist										
County	1539	1641	1750	1866	1990	2122	2263	2413	2573	2744
City	1012	1025	1038	1051	1065	1079	1093	1107	1121	1136
Township	193	196	199	202	205	208	211	214	217	220
Police Traffic Service Patrolman										
County	24241	25853	27572	29406	31361	33447	35671	38043	40573	43231
City	67052	67924	68807	69701	70607	71525	72455	73397	74351	75318
Township	8182	8288	8396	8505	8516	8628	8740	8854	8969	9086

*The National Association of Counties, *The Safety Manpower Survey of Local Governments in the United States*, 1970.

personnel will be required to continue their education in post-secondary educational institutions.

D. PRESENT NUMBER OF STUDENTS ENROLLED IN PROGRAMS AND COURSES

There are approximately 1000 community-junior colleges in the United States. In 1968, there were approximately 199 community-junior colleges offering degree programs in law enforcement. Numerous municipal, county and state governmental agencies provide for police training in academies and schools (U.S. Department of Justice, *Selected Presentations from the 1970 National Conference in Law Enforcement Education*, 1970). In 1970, community-junior colleges in the nation offered 257 associate degree programs in law enforcement (International Association of Chiefs of Police, Inc., *Law Enforcement Education*, 1970).

The U.S. Office of Education's computer printout containing vocational education enrollments by instructional programs, as reported by the states for fiscal year 1969, has been utilized to show enrollment figures having application to the police traffic service category. This was prepared by the Planning and Evaluation Branch, Analysis and Reporting, U.S. Office of Education. Total enrollments, (both male and female) and levels of instruction are illustrated in Table III and Table IV. Table III shows enrollment figures for programs classified as technical. Table IV represents enrollment figures for programs classified as trade and industrial. Enrollment figures for cooperative and apprenticeship programs are understated in both tables due to incomplete reporting of states.

TABLE III

VOCATIONAL EDUCATION ENROLLMENTS FY-1969*

TECHNICAL OCCUPATION					
D.E. Code Number and Program Title					
16 0506 Police Science Technology					
Grand Total	8,109	Male	7,731	Female	378
Post-Secondary	6,726				
Adult Preparatory	149				
Adult Supplementary	1,220				

*U.S. Office of Education, Planning and Evaluation Branch, 1970.

TABLE IV

VOCATIONAL EDUCATION ENROLLMENTS FY-1969*

TRADE AND INDUSTRIAL OCCUPATIONS

D.E. Code Number and Program Title			
17 2802 Law Enforcement Training			
Grand Total	60,167	Male 56,691	Female 3,476
Secondary	210		
Secondary Cooperative	8		
Post-Secondary	34,759		
Adult Preparatory	3,859		
Adult Supplementary	20,697		
Apprenticeship	627		
Special Needs	15		

*U.S. Office of Education, Planning and Evaluation Branch, 1970.

The instructional program entitled "Other Public Services" in the trade and industrial occupations section also shows a large number (27,400) of adult supplementary program trainees and a smaller number (1,198) of adult preparatory program trainees. These figures may represent additional highway safety trainees, including those in police traffic services. But, the exact number cannot be determined from U.S. Office of Education data presently available.

The survey of law enforcement-police science training programs in community-junior colleges revealed that enrollment numbers vary from as few as 15-20 students to more than 800 students enrolled in the Miami Dade Junior College, Miami, Florida. Individual program enrollments tend to be well above 50 in most programs reported.

E. STUDENT RECRUITMENT

The survey of law enforcement-police science training programs revealed that recruiting efforts by institutions are adequate. Respondents were asked to describe their responses in

terms of the following rating scale: more than adequate; adequate; slightly inadequate; very inadequate. The results were: more than adequate, 40 percent; adequate, 52 percent; slightly inadequate, 6 percent; very inadequate, 2 percent. No particular effort has been made to identify why the institutions are quite successful in their recruiting efforts for the law enforcement-police science programs. However, several of the respondents mailed attractive, informative brochures that focus on careers in the various police science-law enforcement areas. Such brochures often give useful information beyond that normally given in college catalogs.

Although the institutions appear to be quite successful in their recruiting efforts, certain restrictions imposed upon students enrolling in various institutions might hinder, deter or block some potential enrollees, particularly the academically deficient. For example, some community-junior colleges require all students entering the institution to have a specified score on the ACT test battery of the American College Testing Program. Other prerequisites for entering some associate degree programs, or other programs of less than the baccalaureate degree level of training, include the following: enrollee must be a high school graduate, or have met the equivalent; enrollee must have completed an approved preparatory program; student must be at least 18 years of age; and students must be at least 5' 10" in height.

Training programs must be based on facts that the students can find employment after completing the program requirements. Therefore, certain unique requirements must be met in order that graduates might find employment. For example, persons completing a training program cannot presently expect to find employment in certain local agencies if under 21 years of age. Some agencies require that the potential employee be in good physical condition. These are occupational requirements, and may not necessarily have to be college entrance requirements. But, these must be taken into consideration when establishing training programs and recruiting students for these programs.

Many community-junior colleges are adopting an "open door" policy for entrance into vocational and technical education programs. Any individual who has a vocational commitment and desires to develop knowledges and skills in a vocation may enroll in the program. Institutions adopting this policy provide for an effective program of vocational guidance, which allows the would-be trainees to assess their potentials and select appropriate training. Students desiring to enroll in programs, but who are deficient in basic educational areas essential to success in developing knowledges and skills in the particular occupation, are counseled concerning their deficiencies and then assigned remedial courses.

F. RELATION OF PROGRAM TO NATIONAL AND STATE SAFETY GOALS AND OBJECTIVES

National and state highway safety goals and objectives apparently have not greatly permeated or influenced many vocational and technical educational law enforcement-police science program offerings in the community-junior colleges. In reviewing the returned instruments sent to the survey group, it is significantly noted that a large percentage (41 percent) of those in charge of programs related to police traffic services indicated that their programs or courses identify with or relate to the national and state programs in highway safety only to some extent. This was based upon the choices given according to the following scale: great extent; moderate extent; some extent; no extent; and I don't know. Several (12 percent) indicated that they did not know to what extent their programs identified with, or related to, the national and state programs in highway safety. There were few (six percent) exceptions in which programs were related to a great extent.

G. EXTENT GRADUATES CONTINUE TO WORK IN THEIR FIELD OF TRAINING

The demands for manpower in law enforcement-police science are illustrated by tabulating the responses to the survey conducted by The Center for Vocational and Technical Education, The Ohio State University. The majority (56 percent) indicated that their graduates continued to work in the field for which the training has prepared them to a great extent. This was based upon the following choices of responses: great extent; moderate extent; some extent; no extent; and I don't know. Most (24 percent) of returned instruments showed course graduates continue to work in the fields for which the training has prepared them to a moderate extent. Although this positive response might be suggestive of some defensive reactions on the part of the persons in charge of programs, one must conclude that the institutions surveyed have been quite successful in the placement of students. This is in light of the fact that most programs have provided for acquiring a rather broad base of knowledge and skills. It can further be assumed that the reason for the relative success in placement is the great need for personnel in the law enforcement-police science field.

H. STAFFING AND STAFF REQUIREMENTS

Most (80 percent) of the survey group revealed that instructional staffs were required to have M.S. or B.S. degrees in the related field of study, plus at least two years of experience in the occupation for which they will instruct. The exceptions to this rule were as follows: 14 percent related that the instructional

staff was required to have experience in the related field only, and no degree was required; six percent indicated that the M.S. or B.S. degree was required in a related field of study (experience not required) for teaching courses in law, psychology, etc. Experience in a related field was the only requirement for teaching such practical courses as police organization and administration, traffic control, and law enforcement techniques.

It can be judged that most institutions desire that their instructional law enforcement-police science staff have strong educational and work experience backgrounds. Certainly, this is in line with the necessity for personnel employed in the law enforcement-police science agencies to be professionally qualified to accept the many incurring responsibilities. However, it is questionable as to whether instructional personnel with appropriate backgrounds can be recruited in adequate numbers for all programs.

It should be pointed out again that most of the programs reported in the study turned out to be most heavily involved in the preparatory, entry-level, more formal type training programs rather than special courses of short duration. These were the associate degree types in most instances. An exception to the rigid, formal programs is in the institutions making provisions for student options the second year. For example, one respondent noted that students major in police science the first year and then have an option the second year between correctional administration and criminology. Another option might be police traffic services.

Many law enforcement-police science personnel are becoming cognizant of the urgency for higher education in the fields in which they work. Many training programs are compatible with the needs of in-service as well as preservice training. However, none of the study respondents indicated that programs were specifically designed for in-service training. Apparently most public secondary school programs are involved relatively little in providing programs for upgrading law enforcement-police science personnel. Not one short course was shown to be in existence in the programs reported. It should not be inferred that such programs do not exist, however. The U.S. Office of Education's summary of enrollments shows a significant number (20,697) enrolled in adult supplementary police science programs for fiscal year 1969. These were reported under the trade and industrial section of the report. The project staff is inclined to believe that many of this number were enrolled in programs offered by secondary schools. It is assumed that relatively little, if any, effort is being made toward providing special short courses in the police traffic services in the community-junior colleges.

I. TYPE CREDITS GIVEN FOR COMPLETION OF PROGRAM

As was indicated earlier, most (96 percent) programs are of the associate degree type. Only four percent of the programs surveyed in the pilot study did not provide for an associate degree. However, these programs provided a certificate to graduates. It is assumed that adult supplementary instructional programs are offered that provide for certificates to those completing requirements.

J. STUDENT OPTIONS UPON COMPLETING PROGRAMS AND INDIVIDUAL COURSES

Most (96 percent) of the law enforcement-police science programs are accredited or approved by at least one regional agency or association, e.g. Middle States Association of Colleges and Secondary Schools. Students successfully completing programs accredited by these agencies or associations would probably have little difficulty in transferring to one of 15-20 four-year institutions in the nation which offer a curriculum in the law enforcement-police science area.

Most programs are designed to allow for several options upon successfully completing requirements. Generally, the graduates may enter full-time employment immediately at the completion, may receive further training in the same field by transferring to another agency or institution, or the graduate may transfer to other programs with at least partial credit acknowledged for completion of this program. Another option offered by some of the programs is that students may enter employment in a specialized field or may elect to enter employment in several specialized fields. The latter option is possible because of the broad base of knowledges and skills provided in criminology, police traffic services, and law enforcement. Opportunities currently exist for employment involving duties and responsibilities in each of these areas.

It has already been mentioned that no special highway safety related courses were reported to be offered in the institutions surveyed. Rather, the individual courses listed were part of the total law enforcement-police science curriculum. Insufficient information exists for judging student employment and educational options upon completing individual courses. However, it is assumed that most individual, or special courses are rather specific and narrow in scope, and geared toward introducing the prospective trainee to new skills and new concepts within a particular occupation. Such an individual may be underemployed and need and want the course for advancement purposes. Or, the individual may be unemployed and need the course in order to be employed.

K. OTHER FINDINGS OF THE SURVEY

Other significant findings of the survey are as follows:

1. Thirty-eight percent of the respondents indicated that instruction is conducted jointly by several persons within the institution.

2. Seventy-eight percent of the respondents acquired specialists from outside the institution to instruct on a part-time basis.

3. All of the respondents showed that the lecture is a method of instruction; 50 percent used planned field activities; 36 percent used simulated classroom and laboratory activities; and 16 percent arranged for part-time on-the-job experiences for the trainees.

4. Thirty percent of the programs received federal funds for program operation; 60 percent received funds from the state; and 59 percent received funds from local sources.

IV. REVIEW AND SUMMARY OF PROGRAMS

One of the objectives of this project is to identify public post-secondary educational program and course offerings in which a significant degree of instructional activities is provided in police traffic services. Based upon an intensive review and analysis of available materials and sources of information, instructional activities which are primarily or solely oriented toward police traffic service are virtually nonexistent in public post-secondary educational institutions.

Numerous law enforcement-police science programs have been identified which provide some instruction in police traffic services. In fact, most existing programs in the post-secondary school reported at least one course that is totally oriented to the traffic service functions, or at least touches upon the subject. Few programs, however, have more than three courses as part of the total curriculum.

Curriculum materials, teaching outlines, job descriptions, course descriptions and other materials were procured from more than 30 directors of law enforcement-police science programs in community-junior colleges. Curriculum materials were acquired from several state supported vocational and technical curriculum materials laboratories. These materials were reviewed by the project staff in developing a working knowledge of law enforcement-police science training.

Some research has been conducted by various agencies in an effort to identify the subject matter content for two-year programs in law enforcement-police science. At least one major research project has been conducted by a major research firm to determine the subject matter content for police traffic services programs. Also, dissertation projects have been submitted to educational institutions by doctoral candidates. Perhaps numerous other individual efforts have been made by various police departments and other governmental agencies to establish some kind of objective criteria for evaluating the effectiveness of police traffic services. A review of some of the research efforts will be included to provide a departure base for developing programs oriented toward the police traffic services functions.

A. TECHNICAL CONTENT OF STATE AND COMMUNITY POLICE TRAFFIC SERVICES PROGRAMS

Edward F. Fennessy, Jr., *et al.*, Travelers Research Center, Inc., contracted with the Department of Transportation to conduct a study in 1968 entitled *Technical Content of State and Community Police Traffic Services Programs*. The objective of the study was:

> . . . to collect, organize and evaluate pertinent and available evidence and data concerning the effectiveness of police traffic services programs as they related to traffic safety. The analysis effort was aimed at identifying minimum standards for police safety performance that could be justified by currently available and scientifically obtained evidence.[4]

The objective has significant implications for curriculum materials development. This study resulted in recommendations to the National Highway Safety Bureau from which guidance could be provided to the states for planning the technical content of police traffic service programs.

Part of the study focused upon identifying standards for basic police traffic service personnel working in various levels of government. The resulting standards were based upon a critical review of available literature describing training programs, a field survey of 101 police jurisdictions and various forms of participation from an advisory council composed of persons knowledgeable in the field of police traffic services.

As a base for developing the basic police traffic service standards, an attempt was made by Fennessy to determine the primary functions of the police in highway safety on a national basis.

Training standards for police traffic services were found to be inadequate in both law enforcement agencies and post-secondary educational institutions. Training programs investigated varied greatly in duration. Training programs offered by law enforcement agencies differed greatly from that provided by post-secondary educational institutions. The differences are primarily in course or subject matter content and length of program offering. Programs in post-secondary educational institutions generally provide for more subjects, particularly in general education in an effort to provide a broad base of knowledges and skills. It is usually anticipated that program graduates can find employment in a number of governmental and private agencies. On the other hand, the training programs offered by law enforcement agencies are designed for personnel already employed. Thus, the trainee is introduced to those knowledges and skills deemed essential for task performance in the particular agency. The formal training is of relatively short duration, with much of the learning taking place through actual experience on the job. Also, programs in police training activities were not based upon the proven employment need of the law enforcement agency. It was concluded that

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[4]Edward F. Fennessy, Jr., *et al.*, *Technical Content of State and Community Police Traffic Services Programs*, 1968, p. 5.

before a well prescribed curriculum could be designed for police traffic service programs, much research is needed to define the needs of the agencies responsible for traffic control functions. It was suggested that general, basic guidelines should be used until such research has been completed.

Fennessy recommended that a complete job analysis be conducted on police traffic functions. The primary concern of a job analysis, according to Fennessy, should be to provide a sequenced step-by-step descriptive profile for all tasks performed by police traffic services officers. The time consumption for tasks performed would also be of prime concern of the analysis. Alternative traffic law enforcement techniques would be studied. From this base experimental programs could be conducted by law enforcement agencies, and subsequently, national standards for police traffic services could be formulated and implemented.

Fennessy continued by pointing out that:

> careful analysis of the many activities of police traffic personnel would help to link together the entire scope of police traffic services, and would enable the design of enforcement programs . . . It would enable police administration to set up specific guidelines for all functional areas of police traffic services.[5]

Table V was developed in conjunction with Fennessy's findings and is intended to suggest the minimum subject requirements for a two-year associate degree program of instruction in police traffic services. Courses directly related to police traffic services are shown in italics. The ideal is that each individual complete the appropriate requirements before actually entering police service. This would be followed immediately by training at a police training academy which would provide for a more complete and proper perspective into departmental rules, regulations, etc.

"Every new recruit should be required to complete a basic police academy program. The program should consist of instruction in the rudimentary skills required for successful police work" (Fennessy, 1968, p. 319). A model for such a program is shown in Table VI. Students completing post-secondary programs which provide instruction in these areas would not be required to repeat this program. Rather, it is intended for all recruits who have not otherwise had such background education and experiences. It is obvious that these models make provisions for many more police traffic service instructional activities than customary.

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[5]Edward F. Fennessy, Jr., *et al.*, *Technical Content of State and Community Police Traffic Services Programs*, 1968, p. 401.

TABLE V

MODEL TWO-YEAR POST-HIGH SCHOOL PROGRAM*

General education requirements (courses)	Professional course requirements (courses)
1. Communication arts and skills	1. Introduction to criminal justice administration
2. Political science	2. *Police organization*+
3. Introductory social science: Psychology Sociology Economics Social Problems	3. Field problems
4. History	4. Criminal law and procedure
5. Laboratory science	5. Evidence
6. Humanities	6. *Introduction to traffic services*
7. Physical development	7. *Investigation techniques*

Electives

1. *Supervisory techniques*	6. *Advanced investigation techniques*
2. Introduction to administration and management	7. *Traffic accident prevention and control*
3. *Traffic collision investigation*	8. *Purpose and objective of the transportation system*
4. *Advanced first aid*	9. Personnel evaluation
5. *Introductory statistics*	

*Edward F. Fennessy, Jr., *et al.*, *Technical Content of State and Community Police Traffic Services Programs*, 1968, p. 321.

+Italicized words refer to subjects more nearly related to police traffic services.

TABLE VI

MODEL STATE TRAINING PROGRAM FOR RECRUIT PERSONNEL*

No.	Subject Area	Approximate hours
1	Introduction to Criminal Justice	9
2	Criminal Law and Procedure	25
	Crimes Arrests (mechanics, legality) Courtroom demeanor Evidence Search and seizure Use of force	
3	Theory of Social Control	6
4	Criminal Investigation	30
	Techniques Special problems Scientific aids Fingerprints Evidence collection Interviewing methods Report preparation	
5	Communication Skills	30
	Technical writing Sentence structure Syntax Spelling	

*Edward F. Fennessy, Jr., *et al.*, *Technical Content of State and Community Police Traffic Services Programs*, 1968, pp. 323-325.

+Italicized words refer to subjects more nearly related to police traffic services.

#No time limit. Practice until proficient.

≠Advanced certification by American Red Cross.

15-25

TABLE VI (Continued)

No.	Subject Area	Approximate hours
	Public speaking Visual aids Sketching Report organization	
6	Patrol Techniques	40
	Preliminary investigation procedure+ *Patrol theory and responsibility* *Special problems and general techniques* Disorderly persons *Drunk and drunk driving* Domestic quarrels Mentally ill persons Prowler calls Crime scene procedure *Driver training and education* *Use of discretion and judgment in patrol* *Police vehicle operation*	
7	Public Relations	6
8	Human Relations	15
	Understanding people Minority social problems	
9	*Traffic Control*	40
	Police traffic services *Collision prevention and control: The role of enforcement* *Traffic law* *Principles of selective assignment* *Accident investigation and reporting* *Mechanics of citation* *Traffic direction techniques* *Protection of the collision scene: On-scene procedure*	

15-26

TABLE VI (Continued)

No.	Subject Area	Approximate hours
10	Juvenile Procedures	6
	Theory of juvenile law Special techniques	
11	Defense Tactics	15
	Arrest techniques Self-defense tactics Weaponless Weapon	
12	Firearms	10
	Safety Weapons familiarization Discretion as to use	
13	Firearms Proficiency	#
14	*First Aid*	20≠
15	Examinations	8
	TOTAL:	260

15-27

Fennessy also learned that performance objectives for police traffic services had not been clearly or adequately established. In other words, appropriate job analysis concerning what the traffic policeman must know and be able to do evidently had not been performed. If such attempts had been made, they were not incorporated in job descriptions, curriculum materials, etc. However, Fennessy's study discovered that several agencies outside public education streams have attempted to develop standards and guidelines for programs in police traffic service. These include the National Highway Safety Bureau (Department of Transportation), the National Safety Council and the International Association of Chiefs of Police (IACP). Table VII and Table VIII show the comparison of the most recent developments by the latter two agencies. Table VII represents one section of the National Safety Council's *Traffic Inventory*. Table VIII represents applicable guidelines from a three-year study by IACP focused upon full-time police activities on controlled access highways. Both charts, as presented herein, were originally presented in *Technical Content of State and Community Police Traffic Services Programs*.

B. DEVELOPMENT OF INSTRUCTIONAL MATERIALS FOR THE TRAINING OF LAW ENFORCEMENT OFFICERS

Green and Schaeffer (1967) submitted a report entitled *Development of Multi-Media Programmed Instructional Materials for the Training of Law Enforcement Officers: Initial Curriculum Study* to the New Jersey Police Training Commission and the New Jersey Department of Education, Division of Vocational Education. The project was contracted with the U.S. Department of Health, Education, and Welfare. The report resulted from an examination of literature in the area of police training and interviews with professional personnel from education and various governmental agencies.

Some of the research findings from Green's and Schaeffer's report have positive relationship to police traffic services curricula. These will be characterized below.

1. Police service personnel in small urban areas have relatively little opportunity for extensive training. This is contrary to the knowledge and skills base needed by the small-town policeman or patrolman who is required to perform many varied duties. The policeman-patrolman in the large city can, in many instances, specialize in one area, such as traffic control.

2. Local determination of police training programs produces a wide range of differences across the nation in curriculum practices. This in turn, makes it difficult for those contemplating new training programs to determine what should be included in police training curricula, and how training content should be selected.

TABLE VII

NATIONAL SAFETY COUNCIL GUIDELINES FOR
POLICE TRAFFIC SUPERVISION*

1. Each state should have a police organization adequately manned, trained, and directed, to supervise traffic, firmly enforce traffic laws, serve motorists, and investigate traffic accidents. Planning should be made a primary continuing function in the organization and program of the department, and continuous attention should be given to the selection of able personnel, and to those management factors that tend to maintain high officer morale.

2. Adequate salary scales, including merit and longevity advances, should be commensurate with those of the business community to assure recruitment and retainment of qualified personnel in police service.

3. Police agencies should make every possible effort to keep abreast of all proven information, techniques, and procedures on police traffic supervision, and make maximum use of them. Facilities and opportunities for training should be enlarged and improved, and training should be made a major budgetary item.

4. Each state should continue efforts to improve the quality and quantity of accident investigation, reporting, and enforcement, thus broadening the factual basis for enforcement planning.

5. Since traffic accidents happen in recurring patterns, traffic personnel assignments should be based on previous periods of accident experience. Such patrol assignment schedules should include appropriate data related to time, location, and violation factors.

6. There should be a strong relationship between the courts and police agencies, assuring uniformity and continuity throughout the enforcement process.

7. The measures of effective performance in enforcement should be regularly reevaluated in the light of current accident experience, and enforcement tactics should be constantly studied in relation to the requirements of the community in which they are applied.

*National Safety Council, *Traffic Inventory*, n.d.

TABLE VII (Continued)

8. Each state should give attention to the pedestrian problem in realistic proportion to its importance within the total problem.

9. Each state should adopt the provisions of the Uniform Vehicle Code relating to intoxicated and drinking drivers and strengthen enforcement attention to the drinking driver problem, including improvement in case preparation, more effective prosecution, and eliminating all manifestations of "fixing" and unwarranted reduction of charges, to the end that enforcement is applied with complete impartiality and justice.

10. Each state should require its police agency to support and participate aggressively in all responsible research in the current problems of traffic policing.

TABLE VIII

GUIDELINES FROM IACP CONTROLLED-ACCESS STUDY*

1. Budgeting
Police should adopt the planning-programming-budgeting (PPB) concept for use in determining police program requirements and the costs thereof on controlled access roads within their jurisdiction, as well as for all other programs.

2. Patrol Availability Time (P.A.T.)
During each patrol shift each officer should have a portion of that shift free for routine patrolling of a highway which may include a relatively small amount of fixed traffic surveillance time, casual inspection of rest areas, investigating unattended vehicles, some report writing, removing debris from the road and so on. P.A.T. is that time during which the officer is unencumbered and available to respond to any demand for his service.

3. Officer's Daily Activity Report
Every patrol officer should complete and submit daily a report of all on-duty activities.

4. Police Use of EDP Equipment
Effective police administration of an operational policy for controlled access and other roads requires extensive information which can best be obtained and processed through the use of modern data processing equipment.

5. Proper Use of Patrol Officer's Time
Police administrators should very carefully examine those expenditures of time on support or nonline activities. Any elimination of or decrease in the time thus consumed increases proportionately the total time available for the performance of direct line related police tasks.

6. Enforcement Guidelines
Police should develop written enforcement guides for all traffic offenses.

7. Officer Court Time
Police should, in consultation with local court officials, devise procedures which will minimize, without detracting from the effective administration of justice, police appearances and time expended in court.

*R. Dean Smith and David A. Espie, *Guidelines for Police Services on Controlled Access Roadways*, 1968, pp. 9-20.

TABLE VIII (Continued)

8. Police Orientation in Highway Traffic Engineering
Police should include orientation in highway traffic engineering as a part of the basic police recruit training curriculum. This knowledge should be reinforced from time to time as necessary.

9. Speed Enforcement Policy
Police should establish a realistic speed enforcement policy, put it in writing, and follow it throughout the agency.

10. Ambulance and Wrecker Services
Police should withdraw from the operation of ambulance and wrecker services.

11. Definition of Patrol
Administrators should define more precisely the term "patrol" for purposes of improved allocation of personnel, planning, budgeting, public information, and other important functions.

12. Minimizing Hazards at the Accident Scene
Police should give special attention to two of the most critical phases of police traffic accident investigation on controlled access roads: a) minimize immediate hazards and b) the prompt removal of vehicles and other obstructions from the roadway.

13. Fatal Accidents
Police should thoroughly investigate fatal traffic accidents, using all available investigation techniques, with the same intensity applied in cases of suspected homicide.

The variety of methods used to select training curriculum content include: 1) acting upon the recommendations of authorities and national committees, 2) adopting programs from other departments, 3) adopting the traditional and customary content, 4) relating curriculum content to philosophy, 5) relating curriculum content to the officers' tasks, 6) relating curriculum content to community needs, and 7) relating curriculum content to qualities necessary for effective policemen.

3. Police training curricula content is organized according to: 1) subject to be covered and the amount of time to be spent in each subject, and 2) types of police action. Organizing content according to subjects and time is most common. The latter is more concerned with instruction starting with the simple, repetitive tasks and moving to the more complex actions. It is sometimes referred to as a "linear program."

4. Most police training courses are taught by the lecture method. Other principal methods used in programs of instruction included: 1) discussion; 2) simulation of practice; 3) actual practice; 4) field training; 5) field observation; 6) practice in the use of work devices; and 7) use of television, films, and recordings. Many experts in the field of law enforcement-police science suggest that more attention should be devoted to methods in problem solving and in the use of discretion in decision-making.

C. A SURVEY AND ANALYSIS OF POLICE SCIENCE CURRICULA

Several research efforts have been undertaken in recent years by doctoral candidates in various universities to survey and analyze the subject content of law enforcement-police science programs in the community-junior colleges. Such reports have usually been presented in partial fulfillment of the requirements for Ph.D. degrees or Ed.D. degrees in graduate schools.

Carl Frank Vaupel, Jr. (1968) submitted a dissertation entitled *A Survey and Analysis of Two-Year Police Science Curricula in the United States with Recommended Criteria* to the Graduate School of Education, University of South Dakota. The research methodology included a questionnaire survey of 145 directors of police science programs and a field investigation of several police science departments.

Vaupel found a lack of uniformity among the programs surveyed. He characterized the problem as stemming from a lack of uniform terminology, deficiencies in course titles and descriptions, and lack of agreement as to what subject matter should be encompassed in a program of instruction. At the same time, many states have a functioning law enforcement commission with responsibilities to establish standards, prescribe courses and content and determine the duration of training.

Other significant findings of this study were:

1. Most of the police science education directors (79.3 percent) surveyed had not changed their program goals in the last five years.

2. The basic requirements for police science programs were 60 semester units (90 quarter units); 27 to 33 semester units were devoted to police science courses. The remainder were general education courses or elective courses.

3. Professional law enforcement personnel are in agreement that the duties assumed by an individual in police services require more than physical skill and a high school diploma.

4. Public or human relation skills are needed for effective law enforcement.

This study was not directed specifically toward determining how much subject matter content is, or should be, offered in police traffic services. However, the study did show only two programs, of 111 considered, adding courses that were obviously oriented toward police traffic services. These courses were in traffic patrol and accident investigation. One program added a course in emergency rescue. Although numerous programs had courses that related to traffic safety, new program emphases were not in the direction of highway and street safety.

Vaupal has recommended a two-year basic curricula for programs in police science. These are shown in the following pages. Table IX represents a preparatory type program. Table X represents a program for personnel already employed by law enforcement agencies. The latter is designed specifically for roles in intermediate administrative positions. Both programs lead to the Associate of Arts degree. Courses that have direct relationship (or imply a relationship) to police traffic control are shown in italics.

These curricula are presented because they represent a synthesis of numerous police science curricula. They accentuate the relatively small amount of attention devoted to police traffic services in two-year associate degree programs and in supplementary type training programs. However, the curricula can be used in planning subject matter elements for police traffic services curriculum materials. Several of the courses must ultimately be considered for inclusion in police traffic services programs, since the curriculum must be matched to the job market.

TABLE IX

TWO-YEAR PREPARATORY TYPE POLICE SCIENCE CURRICULUM*

FRESHMAN YEAR

First Semester	Credit Hours	Second Semester	Credit Hours
1. *Introduction to Law Enforcement+*	3	1. Criminal Law	3
2. English	3	2. English	3
3. History	3	3. Psychology	3
4. Political Science	3	4. Speech	3
5. Physical Education (gymnastics, calisthenics)	1	5. Health	2
		6. Physical Education (swimming)	1
TOTAL	13	TOTAL	15

SOPHOMORE YEAR

First Semester	Credit Hours	Second Semester	Credit Hours
1. Introduction to Criminal Investigation	3	1. *Juvenile Procedure*	3
2. Criminal Evidence	3	2. *Police Internship (Student police patrol on campus and on-the-job practical experiences coordinated and evaluated by employed personnel)*	2
3. Administration of Justice	3	3. *First Aid*	2
4. *Police Patrol*	3	4. Beginning Gunnery	2
5. Sociology	3	5. #Electives	6
6. Physical Education (defensive tactics)	1	6. Physical Education (defensive tactics)	1
TOTAL	16	TOTAL	16

*Carl F. Vaupel, Jr., *A Survey and Analysis of Two-Year Police Curricula in the United States with Recommended Criteria*, 1968.

+Italicized words refer to subjects more nearly related to police traffic services.

#Recommended electives should include subjects pertaining to the areas of psychology, mathematics, science or business.

TABLE X

TWO-YEAR IN-SERVICE POLICE SCIENCE CURRICULUM FOR EMPLOYED OFFICERS*

FRESHMAN YEAR

First Semester	Credit Hours	Second Semester	Credit Hours
1. History	3	1. Literature	3
2. English	3	2. Economics	3
3. Political Science	3	3. Political Science	3
4. *Police Administration*+	2	4. Advanced Criminal Law	3
5. Psychology	2	5. *Introduction to Computer Science*	2
6. Physical Education (calisthenics, weight control)	1	6. Physical Education (calisthenics, weight control)	1
TOTAL	15	TOTAL	15

SOPHOMORE YEAR

First Semester	Credit Hours	Second Semester	Credit Hours
1. Business Speech	3	1. Narcotics and Vice Control	3
2. Introduction to Forensic Science	3	2. Community and Race Relations	3
3. *Police Supervision*	3	3. *Police Seminar*	3
4. Advanced Criminal Investigation	3	4. #Electives	6
5. #Electives	3	TOTAL	15
TOTAL	15		

*Carl F. Vaupel, Jr., *A Survey and Analysis of Two-Year Police Curricula in the United States with Recommended Criteria*, 1968.

+Italicized words refer to subjects more nearly related to police traffic services.

#Recommended electives should include subjects pertaining to the areas of sociology, art, crime photography, police management or accounting.

D. THE JUSTICE DEPARTMENT AND LAW ENFORCEMENT-POLICE SCIENCE TRAINING

The acceleration of urbanization and the subsequent increase in crime prompted Congress to pass the Omnibus Crime Control and Safe Streets Act of 1968. Section 406-Part D, Title I of this Act authorized the establishment of the Law Enforcement Education Program (LEEP). For the first time, student-learner awards in law enforcement were made possible. Many post-secondary educational institutions have participated in LEEP to provide opportunities for professional training in law enforcement--to those already employed in law enforcement agencies, as well as those seeking careers in law enforcement (Caldwell, 1970 National Conference on Law Enforcement Education).

The introduction of LEEP in post-secondary educational institutions has been the impetus needed for further development of existing programs in law enforcement-police science, and for introducing various types of new programs for different employment needs. Because of the opportunity for financial assistance, increasing numbers of youth and adults are enrolling in law enforcement programs.

Although the emphasis has not been toward training police traffic specialists, the LEEP has implications for such training, since most law enforcement employees are heavily involved in traffic services as well as criminal justice.

Only recently a new program to train disadvantaged persons for law enforcement careers was launched by the Law Enforcement Assistance Administration, Department of Justice. Projects were to be initiated in seven states to provide preparatory training for 289 persons and upgrading training for 104 men currently employed by law enforcement agencies. It was initiated by the Department of labor in an effort to increase the number of minority groups and other disadvantaged persons working in public service at the state and local governmental levels. It is designed to upgrade personnel currently hindered from advancing from lower level jobs because of educational and skill deficiencies. Cities in seven states are participating in this program (*Manpower Information Service*, August 1970).

E. THE AMERICAN ASSOCIATION OF JUNIOR COLLEGES AND LAW ENFORCEMENT-POLICE SCIENCE TRAINING

The AAJC has been a prime supporting element in the planning and development of both preservice and in-service law enforcement-police science education in the community-junior colleges. One of the AAJC's more recent activities in the law enforcement-police science area has been the development and dissemination of a

publication entitled *Guidelines for Law Enforcement Education Programs in Community and Junior Colleges*. This manual was prepared by Thompson S. Crockett and James D. Stinchcomb (1968) both authorities in law enforcement training. The manual is directed toward assisting the administrator, supervisor and instructor in meeting the total needs of the modern law enforcement agencies at the federal, state and local levels.

Among other useful information, the manual suggests several possible curriculum patterns for consideration by the area community-junior colleges. The three following tables are taken from this manual. These curricula as shown in Table XI and Table XII are presented because they focus attention to the subjects included in law enforcement-police science training programs. The curricula can be used as a base for selection of core subject matter and alternate subject elements to be included in training programs oriented toward police traffic services.

Table XI represents a program providing an equal dispersement of selected "professional" courses and general education courses. Ideally, students completing this program have the option either to go to work immediately or to transfer, with a minimum loss of credit, to one of the colleges or universities offering a baccalaureate degree in law enforcement-police science.

Table XII represents a special certificate program for communities having a particular need for offering training of shorter duration than the two-year associate degree program, but more than a specialized short course. Such a program might eventually lead to a pursuit of a degree program.

Table XIII lists several of the more common subjects included in short courses, institutes and seminars occasionally or periodically offered by community-junior colleges to key employed law enforcement personnel. Such instructional activities are designed to meet current needs of various governmental or private agencies.

F. REVIEW OF COURSE ALTERNATIVES FOR POLICE TRAFFIC SERVICES

Numerous subjects can be included in instructional activities for police traffic services. These subjects may be prepared as separate entities, such as a short course, or combined to form a large body of curriculum, such as an associate degree terminal program. The subjects may be introduced under a variety of instructional settings, e.g., cooperative work-study and simulated

TABLE XI

SUGGESTED BALANCED LAW ENFORCEMENT CURRICULUM*

FIRST YEAR

First Term	Credit Hours	Second Term	Credit Hours
English	3	English	3
Psychology, Introduction	3	National Government+	3
State and Local Government+	3	Sociology, Introduction	3
Introduction to Law Enforcement+	3	*Police Operations*	3
Police Administration	3	Police Role in Crime and Delinquency	3
#Physical Education	1	#Physical Education	1
TOTAL	16	TOTAL	16

SECOND YEAR

Third Term	Credit Hours	Fourth Term	Credit Hours
Humanities	3	Adolescent Psychology or Social Problems	3
Criminal Law	3	Logic	3
Mathematics	3	Criminal Evidence and Procedure	3
Criminal Investigation	3	Introduction to Criminalistics	3
Public Speaking	3	Elective	3
#Physical Education	1	#Physical Education	1
TOTAL	16	TOTAL	16

*Thompson S. Crockett and James D. Stinchcomb, *Guidelines for Law Enforcement Education Programs in Community and Junior Colleges*, 1968, p. 18.

+Italicized words refer to subjects more nearly related to police traffic services.

#Physical education requirement may be met by first aid, defense tactics, swimming, water safety, firearms, or related subjects. Students exempt from physical education may elect four additional credits.

TABLE XII

A SUGGESTED CERTIFICATE PROGRAM*

Title	Credit
Introduction to Law Enforcement+	3
Police Administration	3
Police Operations	3
Criminal Law	3
Criminal Evidence and Procedure	3
Criminal Investigation	3
Introduction to Criminalistics	3
	21
General Psychology	3
Introduction to Sociology	3
National or State and Local Government	3
	9
	30 credits

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*Thompson S. Crockett and James D. Stinchcomb, *Guidelines for Law Enforcement Education Programs in Community and Junior Colleges*, 1968, p. 19.

+Italicized words refer to subject more nearly related to police traffic services.

15-40

TABLE XIII

SHORT COURSES: POLICE SCIENCE-LAW ENFORCEMENT*

Planning--Its Relation to the Police Task+

Communications Officers' Workshop

Crime Scene Technicians Seminar

Police Budget Workshop

The Police Officer in the Courtroom

Juvenile Handling of Dependent and Neglected Children

Rehabilitation--Myth or Reality?

Police Patrol Workshop

Police Records Seminar (large departments, medium departments, or small departments)

Accident Investigation

Vice Control Workshop

Jail Administration

Court Decisions as They Affect Police Operations

Law Enforcement Photography

The Role of Science in Law Enforcement

Police-Community Relations

Police Procedures in Disaster Situations

The Proper Use of Communication Skills

Leadership and Its Implications

Proper Handling of the Mentally Ill

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*Thompson S. Crockett and James D. Stinchcomb, *Guidelines for Law Enforcement Education Programs in Community and Junior Colleges*, 1968, p. 21.

+Italicized words refer to subjects more closely related to police traffic services.

field activities. Some of the possible major subjects in police traffic service will be briefly delineated.[6]

1. INTRODUCTION TO POLICE TRAFFIC SERVICES. Cities and the traffic problem. Future trends in traffic conditions. History of traffic. Police traffic enforcement in relation to highway and street safety. Citizen responsibilities in traffic safety. Public relations; terminology.

2. TRAFFIC SUPERVISION. Patrol functions. Skills in patrol (on foot, in vehicles). Handling violator contacts.

3. TRAFFIC LAW ENFORCEMENT METHODS. Driver license check points. School safety programs. Aircraft in relation to traffic law enforcement. Radar or speed-timing devices. Chemical test for alcohol. Unmarked cars.

4. ACCIDENT INVESTIGATION. Proceeding to the scene. Protecting the scene. Emergency procedures. Protecting property. Obtaining evidence for cause of accidents. Enforcement action. Reporting post-crash follow-up. Skid mark investigation. Hit-and-run investigation.

5. PHOTOGRAPHY IN ACCIDENT INVESTIGATION. Note taking. Photography techniques. Photographing minute evidence.

6. TRAFFIC COURT CASE PREPARATION. Investigation data in case preparation. Authentic statements and testimony. Confessions. Case preparation techniques. Case reporting. The police officer witness.

7. INTRODUCTION TO HIGHWAY TRANSPORTATION. Nature and scope of the Highway Transportation System. Survey of major functional areas of the highway transportation systems with emphasis on their interaction.

8. HIGHWAY TRAFFIC ADMINISTRATION I. Examination of United States transportation systems, emphasizing efficient, safe and rapid operating. Activities and agencies concerned with increasing efficiency. System's development components, social, economic and political impacts. Survey of present and future needs.

9. HIGHWAY TRAFFIC ADMINISTRATION II. Police and course traffic administration. Administration and maintenance of motor

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[6]Content has been taken largely from *Traffic Law Enforcement: A Guide for Patrolmen*, which included selected presentations at the National Institute on Traffic Safety, 1962; and the Police Science Curriculum, Northern Virginia Community College, Annadale, Virginia, 1969.

vehicle and driver records. Traffic direction and control. Traffic accident investigation, and traffic law enforcement. Communication aspects of highway traffic administration. Highway traffic education programs and public information. Motor vehicle fleet safety programs. Utilizing traffic safety research.

10. SAFETY PRINCIPLES OF MOTOR VEHICLE TRANSPORTATION. An investigation of the principles and practices which have a bearing on highway traffic safety and its attendant problems. Topics include: the role of driver education, effect of traffic density, traffic operations and control, influencing driver behavior, economics of highway safety, convenient highway transportation.

V. A REVIEW OF COURSE SYLLABI IN POLICE TRAFFIC SERVICE

Curriculum guides, course outlines, course descriptions, and other materials have been accumulated through the project. Although most of the materials relate to broad training objectives in law enforcement-police science, most programs contain at least one course within the total curriculum that relates specifically to the traffic control function. Several of these courses appear to have substantial promise in terms of offering a great deal of knowledge, and in some cases skills in police traffic services. Selected syllabi are exhibited in the appendix and may be used for evaluating subject matter content, and may serve as a reference to base recommendations for the future design of the best program of instruction in police traffic services.

The following general remarks will assist the practitioner in translating the course syllabi for practical applications.

A. The syllabi contents are presented largely in their original forms. One outline was shortened to include only major topics. All materials have been edited.

B. Most of the outlines were selected from two-year program curricula in law enforcement-police science. They were selected primarily upon the basis of subject matter content deemed essential to the police traffic control function. They were developed primarily for use by instructors and guest lecturers in presenting subject matter to students.

C. The primary method of instruction appears to be the lecture. Other methods include simulated activities and special projects. Field trips are scheduled for observing police traffic services personnel in action. However, some of the material is designed for in-service training. Therefore, trainees have opportunities to apply the knowledges and skills learned. Some of the outlines do not indicate the type method for instruction. Student internship seems to be virtually nonexistent in the programs from which these materials were selected.

D. Most of the course syllabi appear to be designed to give an overview of police traffic control, rather than for intensive knowledge and skills development. However, some of the in-service material is designed for special emphasis on a particular police traffic service function, such as supervising police traffic services.

E. The course titles or syllabi contents do not necessarily represent a national consensus of what should be included in the police traffic services curriculum. Also, there is considerable overlapping of content among the syllabi.

VI. SUMMARY OF STUDY

Research efforts have lead to positive identification of safety specialists manpower needs in police traffic services at the state and local employment levels. The passage of the 1966 Highway Safety Act and the subsequent implementation of a National Highway Safety Program by the Department of Transportation underscores the determination to do something about the increasing rise in highway accidents.

It is hoped that a careful review and analysis of the material in this package will contribute to the improvement, extension and expansion of highway safety related instructional activities in police traffic services. However, the practitioner must be careful to introduce those instructional activities for which there is a genuine need in terms of local and state employment requirements.

In some instances compendiums and other curricular elements presented in this package were developed by local instructors and advisory groups to meet local, geographic employment needs. Each course syllabus presented does not represent a national consensus. In most instances, the materials have been pulled from a larger context, usually "program" curricula, and must be viewed from this standpoint. Other comments regarding post-secondary educational training in law enforcement-police science are in order at this point.

From the materials analyzed it appears a small amount of emphasis is being placed on traffic control and services in the law enforcement-police science training programs. This trend seems to stem from the increased societal pressures for more police services, especially in crime-prevention and control, of a non-traffic nature. Also, the social pressures for more job status seem to be fostering an ever increasing demand for more strict educational requirements for entry-level positions in police services. There seems to be a tendency to equate job ability or performance with general education pursuits.

The training programs for police and law enforcement personnel appear quite diversified from institution to institution. This diversification seems to stem, at least in part, from local needs, conditions or regulations, but largely from the different philosophies of those individuals developing and implementing the programs.

Task and occupational analysis do not appear to be the basis for curriculum planning and development for law enforcement-police science training. This is in contrast to the fact that the task and occupational analysis approach is accepted by vocational and technical educators as being the more realistic way to establish curriculum content.

VII. RESEARCH-DISCUSSION TOPICS

This report has brought to the attention of such interested parties as administrators, supervisors and instructors some of the strengths and weaknesses in vocational and technical instructional activities that relate to police traffic services. Several questions remain unanswered in regard to program development and implementation. These will be presented in this section. It is hoped that they will be carefully considered by responsible groups and individuals in order that planned and existing instructional programs might be a key factor in reducing highway and street accidents. The questions are not in any rank order of importance.

1. What would be the most effective way to formulate the technical content of police traffic service?

2. What would be the most effective way to get both the educational institution and the employment agency to recognize essentially the same technical content as being appropriate for entry and/or advancement into police traffic service?

3. What would be the most effective way to minimize the problems of varying terminology in police traffic service, particularly as this relates to occupational titles?

4. How can the essential degree of national standardization be accomplished in police traffic service instructional activities?

5. What strategies can be applied to identify the manpower specialists needs of local and state law enforcement agencies?

6. What new strategies can be applied to acquire and maintain the degree of educational and employment agency cooperation conducive to the planning and developing functions?

7. What are the inherent problems associated with changes being made in curricula now being used in conjunction with instructional activities? How can these problems be solved?

8. What types of programs would the community-junior colleges and area vocational and technical schools be capable of offering? What groups currently have the greatest need for training? What educational and/or occupational experience requirements should be established for instructors (by program and course)? How can staffing and staff requirements be met?

9. What student prerequisites should be established for students entering each type program course? What problems are inherent in liberalizing student prerequisites?

10. How might programs of instruction be more closely tied to the National Highway Safety Program?

11. What are the differences in the police traffic functions in large urbanized areas and areas which have relatively sparse populations? What influence do these differences have upon programs of instruction?

12. What "courses" or subject areas should be encompassed in an associate degree program? What are the most important subject areas to be considered?

13. What strategy could be applied in developing the type facility needed for training personnel in police traffic services? What equipment, furnishings and supplies would be needed? What would be the cost of these items?

14. What student occupational options could be designed into preparatory type curricula? What subjects would each option encompass? Could police traffic services core subjects be included as an option?

15. What key textbooks and resource material, both instructor and student oriented, would be appropriate for use in the police traffic services instructional activities?

16. To what degree can police traffic personnel be expected to perform duties outside the field of highway safety, such as riot control and criminal investigation? Can the duties be minimized?

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Police Report Writing. (California State Peace Officer's Training Publication, No. 68). Department of Education, 721 Capitol Mall, Sacramento, California, 1964.

Saunders, Charles B. *Upgrading the American Police. Education and Training for Better Law Enforcement*. The Brookings Institute, Washington, D.C., 1970, 182 pp.

Smith, R. Dean, and Espie, David A. *Guidelines for Police Services on Controlled Access Roadways*. Research and Development Division, International Association of Chiefs of Police, Washington, D.C., April 1968.

Southwestern Law Enforcement Institute. *Traffic Law Enforcement: A Guide for Patrolmen*. Springfield, Illinois: Charles C. Thomas, publisher, 1966.

State Department of Education, Bureau of Vocational-Technical and Adult Education. *Peace Officer Training (Law of Arrest, Search, and Seizure): Instructor's Guide*. Charleston, West Virginia: Bureau of Vocational-Technical and Adult Education, State Department of Education, Capitol Building, 1966, 203 pp.

Vaupel, Carl F., Jr. *A Survey and Analysis of Two-Year Police Science Curricula in the United States with Recommended Criteria*. Ann Arbor, Michigan: University Microfilms, 300 North Zeeb Road, 1969.

Weston, Paul. *Police Traffic Control Function*. Springfield, Illinois: Charles C. Thomas, publisher.

Williams, John B. *Introduction to Investigation and Police Procedures*. (California Training Series No. 75). Department of Education, 721 Capitol Mall, Sacramento, California, 1966.

FILMS - POLICE TRAFFIC SERVICES

Accident Investigation. 15 minutes, California Highway Patrol, 2490 First Avenue, P.O. Box 898, Sacramento 14, California.

Laws, Enforcement, and Courts. 30 minutes, Indiana University, Audio Visual Center, 1840 East 10th Street, Bloomington, Indiana.

Traffic Police. six minutes, President's Committee for Traffic Safety, 1711 H Street, N.W., Washington, D.C.

Your Highway Patrol. 13 minutes, Fass-Levy Films, 1320 Quebec Street, Denver 20, Colorado.

APPENDICES

EXHIBIT A

TRAFFIC ADMINISTRATION*

COURSE DESCRIPTION

History of traffic control; traffic law; investigation of traffic accidents; the police role in education, engineering, recording, and enforcement; instruction on chemical intoxication and related tests.

TEXT

Weston, Paul B. *The Police Traffic Control Function*. 2nd ed. Springfield, Illinois: Charles C. Thomas, publisher, 1968.

OTHER READINGS

Selected articles from newspapers, magazines, periodicals, television programs, and the Action Program.

OBJECTIVES

To give the student a broad foundation in the four E's of traffic (Engineering, Education, Enforcement, Enactment) as they relate to the police responsibilities of assisting in the safe and efficient movement of goods and services on our streets and highways.

PROCEDURES

The use of audiovisual aids, guest lecturers, and demonstrations in addition to regular class lectures and discussion topics. Each student will be required to write a "position paper" and present a synopsis of the same to the class. The paper is to be on an up-to-date "controversial" issue. The paper will count the equivalent of an exam.

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*Selected from a two-year police science curriculum, Harrisburg Area Community College, Harrisburg, Pennsylvania, 1969.

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BASIS OF EVALUATION

90% = A, 80% = B, 70% = C, 60% = D. Based upon total top scores obtained on each exam for the semester. The top score is used as determiner on the assumption that anything above that score may have been inadequately covered or some questions difficult for the student to understand.

ENFORCEMENT

I. Necessity and Purpose of Traffic Regulation
   A. Recognition of problem
   B. Purpose of traffic laws

II. History of Traffic Laws
   A. Development of local traffic laws
   B. Development of interstate laws
   C. Development of intrastate laws
   D. Judicial interpretation of traffic laws

III. Power to Regulate Traffic
   A. Regulation under state power
   B. Nature and scope of police power
   C. Power to restrict use of public highways
   D. Privilege versus right to drive

IV. Speed Measurement Devices
   A. Types of devices
   B. Constitutional aspects
   C. State statutes
   D. Warning signs
   E. Speed detection by aircraft

V. Validity of Traffic Laws
   A. Basic requirement of criminal law in general
   B. Basic requirement of traffic law in general
   C. Constitutional aspects
   D. Construction of traffic laws and ordinances
   E. Determination of validity

DRIVING WHILE INTOXICATED

I. Elements of Offense

II. Prosecution of Offenses

III. Devices to Determine Degree of Intoxication
   A. Certification by commonwealth on use of mobat
   B. Reliability

ENACTMENT

I. Federal Involvement

II. Federal Safety Standards
  A. Scope
  B. Enforcement
  C. Implications

ENGINEERING

I. Defined

II. Scope
  A. Highways
  B. Vehicles

III. Who Performs Function
  A. City
  B. County
  C. State

IV. Engineering Devices
  A. Signs
  B. Signals

ACCIDENT INVESTIGATION

I. Skid Mark Evidence
  A. Computation of speed from skid mark evidence
  B. Legal aspects of skid mark evidence

II. Accident Reports and Diagrams
  A. Obtaining data
  B. Analysis of data

OPPORTUNITIES FOR EXPERIMENTATION OR INNOVATION

With the increase in equipment allotted for the Division of Police and Public Administration, greater emphasis can be placed on the Accident Investigation aspects from a scientific standpoint. The structure of the class will be the determining factor as to how closely the tentative schedule of time will be followed.

EXHIBIT B

POLICE OPERATIONS*

COURSE DESCRIPTION

A complete theoretical study of the duties of a law enforcement officer in the line operations of Patrol and Traffic. Discussion of responsibilities, powers and duties of the uniformed officer along with the administration, operation, distribution of manpower of the primary function of a police agency.

ONE SEMESTER

Three credit hours

PREREQUISITE

None

TEXT

Chapman, Samuel G. *Police Patrol Readings*. Springfield, Illinois: Charles C. Thomas, publisher, 1964.

OBJECTIVES

1. To train students in the responsibilities, techniques and procedures of the uniformed beat patrol.

2. To develop an appreciation for the importance of the Patrol Officer in police operations; the service he renders to the community; and the wide variety of tasks he is required to perform.

3. To establish an understanding of the problems of traffic control; engineering techniques; highway and street capacity; and congestion control.

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*Selected from a two-year police science curriculum, Onondaga Community College, Syracuse, New York, 1969, pp. 27-28.

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MEANS OF ACHIEVING OBJECTIVES

1. Classroom participation.
2. Quizzes, midterm and final examinations.
3. Assigned readings.
4. Field trips and projects.

CONTENT

1. Historical Background.
2. Patrol Theory, Organization and Responsibility.
3. Traffic Problems, Enforcement, Engineering and Education.
4. Patrol and Traffic Supervision.
5. Accident Investigation and Traffic Regulation.

COURSE OUTLINE

I. Introduction to Patrol
   - A. Organization
   - B. Purpose
   - C. Objectives

II. Methods of Patrol
   - A. Distribution
   - B. Specialization
   - C. Special systems

III. Patrol Hazards
   - A. Civil disturbances

IV. Introduction to Traffic Administration
   - A. History
   - B. Development of vehicle and traffic laws

V. Traffic
   - A. Direction and control
   - B. Accident investigation
   - C. Reports and records
   - D. Courts
   - E. Research and development

VI. The Training Function
   - A. Patrol and traffic

VII. County and State Agencies
   - A. Patrol and traffic

VIII. Inter and Intradepartmental Administration

IX. Pursuit Driving

X. Complaint Work

XI. Role Playing
A. Field interrogation

XII. Special Problems

EXHIBIT C

TRAFFIC CONTROL AND ACCIDENT INVESTIGATION*

HOURS

Three quarter hours - 72 clock hours.

COURSE DESCRIPTION

Covers instruction in routine intersection and emergency traffic control procedures and practice in standard hand signals to achieve maximum safety and orderly results. A study of the State Motor Vehicle Code with special emphasis on the most frequently used sections; elements of the violation and their application; violator contact and public relations; selective enforcement problems. The fundamentals of traffic accident investigation, from notification of the incident, through testimony in court. A study will be made of the Federal Highway Safety Act and its implications upon the state.

The laboratory sessions will provide field experience:

1. Observing traffic courts in operation.
2. Conducting mock traffic accident investigations.
3. Practice in testifying in mock traffic court procedures.

OBJECTIVES

1. To enable the student to handle effectively a traffic situation from report of incident through testifying in court.

2. To provide a necessary understanding of the problems of traffic control.

3. To provide the student with a working knowledge of the most frequently used sections of the Motor Vehicle Laws of the state and related local ordinances.

CONTENT OUTLINE

I. Traffic Enforcement
   A. Traffic legislation

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*Selected from a law enforcement curriculum, Yakima Valley College, Yakima, Washington, 1970, pp. 20-28.

1. Vehicle code
2. Local ordinances
3. Model traffic laws

B. An enforcement program
   1. Determining facts
   2. Diagnosis of needs
   3. Coordination with
      a. Courts
      b. Prosecutor
      c. Public
   4. Selling plan

C. Selective enforcement
   1. Definition
   2. Distribution of traffic force
      a. Time
      b. Place
   3. Concentration of individual officers
      a. Time
      b. Place
      c. Violations
      d. Violators
   4. Devices for maintaining selective enforcement
      a. Spot maps
      b. Records

D. Measures of degree of enforcement
   1. Ratio between injuries, accidents, and arrests
   2. Ratio between arrests and convictions
   3. Ratio between injuries and convictions
   4. Effectiveness of convictions
   5. Observance checks
      a. Stop and go signals
      b. Stop line
      c. Defects
      d. Pedestrian observance

E. Handling problems arising from congestions
   1. Intersection duties
      a. Position of officer at intersection
      b. Signs and signals used by officers
   2. Parking problems
      a. Parking prohibitions
      b. Loading zones
      c. Overtime parking
      d. Parking meters

F. The moving violator
   1. In the hole vs. patrol
   2. Stopping the car
   3. Approach to violator
   4. Handling the unruly
   5. The drunken driver

II. Traffic Control
    A. General considerations
        1. Definition of traffic control
        2. Importance of traffic control
            a. Prevention of accidents
            b. Eliminates congestion
            c. Eliminates conflicts between vehicles
            d. Public relations
    B. Point control
        1. Definition
        2. Techniques
            a. Allocation of flow
            b. Controlling turning movements
            c. Anticipating causes of congestion
            d. Manual direction of traffic
            e. Approach of emergency vehicles
            f. Information seekers
        3. Control of pedestrians
    C. Signs, barricades, etc.
        1. Signals
        2. Signs
        3. Flares
        4. Barricades

III. Traffic Division Organization
    A. Organization and introduction
        1. Officer in charge
        2. Motorcycle, automobile traffic patrol
        3. Uniform traffic patrol
        4. Junior traffic patrol
        5. Bicycle Bureau
        6. Driving schools
        7. National Traffic Safety Council
    B. Traffic engineering
        1. Engineering as applied to traffic
        2. Direct use of engineering
            a. Eliminate hazards
            b. Proper use of signs, signals, markers, and islands
            c. Need and value of throughways, bypasses, and one-way streets
            d. Curb and off-street parking
        3. Traffic engineer and the police officer
            a. Use of control devices
            b. Police traffic burden controlled by poor or bad engineering
            c. Complaints
        4. Practical application of traffic engineering
            a. Accident locations
            b. Proper use of signal devices
            c. Determination of safe speeds

d. Curb parking restrictions
e. Throughways, one-way streets, etc.

5. Collision diagrams
   a. Purpose and use
   b. When to study worse corners
   c. Preparation
6. Condition diagrams
   a. Purpose and use
   b. Preparation
7. Sign studies
   a. Purpose and value of signs
   b. Proper design and use
   c. Obedience studies
8. Traffic signal studies
   a. Purpose, value, and limitations
   b. Proper design
   c. Types and uses
   d. Obedience studies
9. Speed studies
   a. Speed and its importance
   b. Safe approach speeds
   c. Speed checks
10. Parking studies
    a. Curb parking
    b. Off-street parking
    c. Parking meters
11. Motor vehicle and pedestrian volume counts
    a. Purposes and use
    b. Methods of counting
12. How to study a hazardous location
    a. Collision and condition diagrams
    b. Field studies
    c. Conclusions and recommendations
13. Highway and street design

C. Junior traffic patrol
   1. What junior traffic patrols are
      a. History and development
      b. Purpose

IV. Traffic Accident Investigation
   A. Introduction
      1. Objectives and functions of the traffic investigator
         a. Determine all the facts relating to the incident
         b. Success depends upon proper evaluation of the physical evidence
         c. Know what scientific aids are available
         d. Identify the car involved
         e. Identify the suspects involved
         f. Corroborate or disapprove statements
      2. Value of training in accident investigation
         a. Accident investigation is important

b. Knowledge of what to do is necessary

3. Value of a fixed procedure
   a. Simplified the determination of the cause
   b. Logical order
   c. Eliminates duplication or forgetting
   d. Builds favorable public opinion
   e. Thoroughness impresses people involved
   f. Highlights accident cause
   g. Produces reliable data
4. Types of procedures
   a. Normal
   b. Late investigated incidents
   c. Hit-and-run

B. Steps in normal accident investigation procedure
1. Proceed to scene quickly and safely
   a. Need for prudence
   b. Aid to be had from improved dispatching
   c. Dangers in delayed arrival
2. Park properly at accident scene
   a. With safety and convenience for self and vehicle
   b. With thought to use of car equipment
   c. Considering the pattern you set
3. Care for injured and protect their property
   a. A first responsibility
   b. Render First Aid (especially treating for arterial bleeding and shock)
   c. Summon medical aid if required
   d. Arrange for proper transportation
4. Safeguard scene from further accidents
   a. Action necessary if governed by many factors--hazards, severity, traffic conditions, weather, terrain, visibility, speed, location, etc.
   b. Typical things to do
      1. Call for assistance if necessary
      2. Divert traffic
      3. Place flares
      4. Call for special equipment to remove traffic hazards
5. Determine if it is a hit-and-run case
   a. Not always obvious
   b. Delay in determination may enable driver to escape
   c. Decision can be made simultaneously with other earlier steps
   d. If hit-and-run, see steps outlined under that heading
6. Locate and interrogate operators
   a. Establish personal identity
   b. Determine physical condition
   c. Get first the essential information for report
   d. Hear his story uninterruptedly

e. Value of questioning each separately

7. Locate and question witnesses
   a. Can be found if sought properly
   b. Handle properly when found
   c. Determine reliability
   d. Written statement by witness
   e. Witnesses restate stories in presence of defendent
8. Note all physical conditions at scene
   a. Importance of systematic check
   b. Accuracy and completeness of data
   c. Sufficient detail to enable reproducing scene
   d. See text for suggested check list
9. Take photographs if needed
   a. Rule: take only if helpful to further investigation
   b. Usual uses
   c. Precautions
   d. Use of sketch as substitute
10. Inspect and test vehicles involved
   a. Extent, location, nature of damage
   b. For evidence of violations such as:
      1. Faulty or inadequate brakes
      2. Worn steering assembly
      3. Lack of windshield wiper
      4. Inadequate lighting equipment
      5. Lack of safety devices on commercial vehicles
      6. Defective windshield
      7. Vision obscurements
      8. Weight, width, and length violations
11. Determine cause or causes of accident
   a. Prevention program based on findings of investigators
   b. Requires deliberate, painstaking effort
   c. Predominant cause not always violation
   d. Investigator in best position to indicate cause
12. Take enforcement action if warranted
   a. Citation
   b. Physical arrest
   c. Notice of violation (warning)
   d. Other
13. Clear up the scene
   a. As a safety precaution
   b. For opinion-forming value
   c. Action to take determined by conditions at scene
14. Follow-up on nature and extent of personal injuries
   a. Visit hospital, doctors, morgue
   b. Quiz injured (pedestrian, operator, passenger)
   c. Secure additional evidence (urine-blood samples)

15. Write report of investigation
    a. Use of standard form facilitates reporting
    b. Common understanding of terms essential
    c. Investigating officer more than a "reporter"

C. Late investigation procedure
  1. Importance of such investigation
    a. May involve operators who need investigation
    b. Minimize complaint of drivers who call police
    c. Police interest in "accidents" should be consistent
  2. Purpose
    a. To obtain reliable facts as to cause and condition surrounding accident--limited value of one driver's story
    b. To discourage drivers from failing to call investigators
    c. To maintain "deterrent" effect
  3. Difficulties of late investigation
    a. Principals resentful, witnesses difficult to locate, physical evidence destroyed, altered, or removed
    b. Operators, hoping to avoid prosecution, may mislead
    c. Time-consuming
  4. Suggested procedure
    a. Question each operator (pedestrian) involved--key to successful investigation frequently here
    b. Visit the accident scene with operator
      1. Check conditions--look for physical evidence
      2. Reenactment of events leading to accident
    c. Check vicinity for witnesses
    d. Interview passengers
    e. Examine the vehicles involved
    f. Consider enforcement action
  5. Learning about the unreported accident
    a. Information from many sources
      1. Garage check
      2. Observations on routine patrol
      3. Hospitals, doctors
      4. Newspapers
      5. Other official agency

D. Hit-and-run investigation procedure
  1. Basic distinction--this and other type of accident
    a. At least one violation complete
    b. Elements of violation to be checked
    c. Determine initial cause of accident
  2. At headquarters
    a. Receive notice of hit-and-run accident
    b. Investigators dispatched
    c. Description broadcast to all field officers--wanted car, direction of travel

d. Search of central records for leads
e. Receive and transmit all additional information

3. In field
   a. Complete steps 1 - 4 normal investigation
   b. Determine if accident is hit-and-run
   c. Confirm to headquarters including car and operator identification information
   d. Locate and question operator if any at scene
   e. Locate and question witnesses
   f. Search for leads identifying car or driver
      1. Probable damage on hit-run car
      2. Materials for later comparison and identification
      3. Personal property
      4. Return of defendant to accident scene
      5. Check damage to struck object
   g. Have rebroadcast made if better description is now available
   h. Take photographs--rule
   i. If pedestrian is involved
      1. Obtain his explanation
      2. Examination of body
      3. Procurement of hair, blood, and clothing samples
   j. Canvass area for additional witnesses

4. Follow-up activity
   a. Investigate suspect driver leads
      1. From witness-supplied information
      2. From identification of car
   b. Search vicinity for added information on hit-run car
   c. Routine canvass of garages, repair shops, etc.
      1. In accordance with fixed plan
      2. Inform garage men when lead is good
   d. Request aid of parts dealers
   e. Check cars similar to make and type of hit-run car and owners of same
   f. Revisit the hit-and-run scene periodically
   g. Recanvass neighborhood for additional witnesses
   h. Solicit cooperation by publicizing case
   i. Arrange for scientific analysis, identification or comparison of evidence which may lead to identification of car or driver

E. Scientific aids available
   1. Classification of physical evidence
      a. Common material which becomes detached from cars
         1. Glass fragments
         2. Paint spots and particles
         3. Fabrics and fibers
         4. Hair

5. Blood
6. Broken parts of the car

b. Traces that are produced by reason of the incident

1. Fingerprints
2. Tire and skid marks
3. Footprints
4. Traces exchanged at point of impact of cars

F. Photography in accident cases

1. Camera is a valuable tool

a. Photography represents a clear and understandable picture of the event
b. Pictures can be used to clear up facts and disputed points
c. Prevents misinterpretations by the judge, jury, and others
d. Gives impression of authority and accuracy
e. Valuable to traffic engineering and safety

2. Photograph must represent evidence which is itself competent and material
3. Photograph must be authenticated

G. Accident reports

1. Purpose and function
2. Functions pertaining to police department

a. Planning
b. Permit results to be checked
c. Public relations

3. The report

a. Purpose
b. Function
c. Use in selective enforcement
d. Use in selective education

4. Engineering for safety

a. Treatment at specific locations
b. Before and after studies
c. Accident patterns

5. Driver regulation
6. Driver control through legislation
7. Definition and classification of accidents

a. Deaths must be reported
b. Types of reporting systems
c. Definition of injury

8. Accident report form

H. Conclusion

1. Summing up of accident investigation
2. Explaining necessary facts
3. Statements needed as part of evidence
4. Testifying in court

V. Examination and Review

LABORATORY OUTLINE

I. Collect available statistics and facts concerning traffic accidents and problems.

II. Collect materials from local or state traffic engineers describing their role in traffic safety.

III. Determine the role of various local police agencies and their part in the traffic safety program.

IV. Prepare traffic control maps for a simulated congestion control problem.

V. Intersection street studies of traffic control devices, mapped and described in detail. Students' suggestions for improvement of present efficient operation. Classroom discussion.

VI. Set up and maintain spot maps as to location, time, and cause of accidents. Compile lists of hazardous intersections and possible corrective action.

VII. Divide class into various sections for parking problems, congestion problems, and methods of traffic direction used and possible improvements.

VIII. Visit by student to local traffic court.

IX. Study of operation of safety patrols, engineering of intersections for pedestrian use and methods of education for pedestrian safety.

X. Visit real or simulated accident scene and conduct investigation.

XI. Detailed drawing of actual or simulated accident scene.

XII. Update spot maps used to show locations, time, and cause of accidents.

XIII. Provide mock traffic court sessions providing the student opportunity to practice testifying in simulated traffic cases.

BIBLIOGRAPHY

Recommended Text:

Baker, James S. *Traffic Accident Investigators Manual for Police*. Evanston, Illinois: The Traffic Institute of Northwestern University.

Reference Material:

American Bar Association and Traffic Institute of Northwestern University. *The Judge and Prosecutor in Traffic Court*. Evanston, Illinois: The Institute, 1951.

Baker, James S., and Stebbins, William R. *Dictionary of Highway Traffic*. Evanston, Illinois: Traffic Institute of Northwestern University, 1957.

Donigan, Robert L. *Chemical Tests and the Law*. Evanston, Illinois: Traffic Institute of Northwestern University, 1957.

Fisher, Edward C. *Right of Way in Traffic Law Enforcement*. St. Louis: Thomas Law Book Company.

International Association of Chiefs of Police. *Definitions and Enforcement Rates*. Evanston, Illinois: Traffic Institute of Northwestern University, 1950.

Joint Committee of American Association of State Highway Officials, American Public Works Association, and Institute of Traffic Engineers. *Traffic Engineering: Functions and Administration*. Chicago: Public Administration Service 1948, reprinted 1953.

Motor Vehicle Laws of the State of Washington - Title 46 R.C.W. Olympia: Washington State Printing Office, current year.

National Committee on Uniform Traffic Laws and Ordinances. *Model Traffic Ordinance*. Washington, D.C.: The Committee, 1956.

National Conference on Uniform Traffic Accident Statistics. *Uniform Definitions of Motor Vehicle Accidents*. Washington, D.C.: U.S. Government Printing Office, 1954.

Northwestern Traffic Institute. *Traffic Officer in Court*. Evanston, Illinois: Traffic Institute of Northwestern University.

Professional Journals, Periodicals:

Traffic Institute of Northwestern University. Traffic Law Enforcement Series. Evanston, Illinois: The Institute. (In-service Training Manuals available from the Traffic Institute, 1804 Hinman Avenue, Evanston.)

Applicable Training Bulletins of the Local Police Agencies:

Journal of Criminal Law, Criminology and Police Science. 357 East Chicago Avenue, Chicago, Illinois.

EXHIBIT D

TRAFFIC CONTROL*

COURSE DESCRIPTION

The fundamentals of traffic enforcement and the psychology of enforcement; the study of traffic laws, history of the State Vehicle Code; a review of traffic engineering and control techniques; the organization of a traffic unit; the technique of accident investigation; the purpose of accident reports and accident report writing.

OBJECTIVES OF THE COURSE

1. To provide a knowledge of the primary functions performed by a Traffic Officer.

2. To acquaint the student with the basic knowledge of the State Vehicle Code, traffic enforcement tactics, traffic engineering, and accident investigation.

3. To acquaint the student with a working knowledge of accident investigation reports and report writing.

ORGANIZATION OF THE COURSE

1. Text.

2. Examination - Two tests during semester; one midterm, one final examination.

3. Type of examination - multiple choice, fill in, true and false.

4. Assigned work - research assignments - text reading.

5. Type of presentation - lecture, class discussion, audiovisual aids, guest lecturer (traffic engineer, Division of Highways, and C.H.P. skid expert).

6. Field trips - one planned to local police department and State Highway Patrol Zone Headquarters.

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*Selected from a police science curriculum, College of Marin, Kent Field, California, 1969.

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7. Method of student evaluation: a) class participation in discussion periods, b) results of examination (midterm and final), c) evaluation of current assignments.

COURSE OUTLINE

I. Traffic Laws
   A. History of traffic laws and the early Vehicle Code (organization)
   B. Intent of Vehicle Code
      1. Driver license laws
      2. Vehicle registration
      3. Financial responsibility
      4. Authorized emergency vehicles
      5. Brakes, lights and safety inspections

II. Traffic Enforcement
   A. Traffic legislation
      1. Vehicle Code
      2. Local ordinance
      3. Model traffic laws
   B. An enforcement program
      1. Selling the program
         a. Courts
         b. Prosecutor
         c. Public
   C. Selective enforcement
      1. Definition, reason
      2. Employment
         a. Time
         b. Place
         c. Violations
   D. Employment of enforcement
      1. Rate of accidents
         a. Fatal vs. injury and property damage
         b. Arrest and conviction rate
         c. Officers arrest index
   E. Apprehension of traffic violator
      1. On view patrol
      2. Best approach in stopping violator
      3. Handling the public
         a. Assistance to the public
      4. Clocking speed
         a. Dangers - in driving and apprehension

III. Traffic Engineering and Control Techniques
   A. General use of traffic engineering
      1. Geometric design
      2. Safe, convenient and economic transportation
      3. Parking and loading

B. Planning in engineering
    1. Human factor, vehicle factors
    2. Traffic volumes, speeds and delay study
    3. Travel patterns
    4. Parking and terminal factors
    5. Mass transit systems
    6. Accident picture
    7. Prevention of accidents
    8. Public relations
C. Traffic control techniques
    1. Signals - signs - pavement markings - channelization
    2. Manual - point control
        a. Controlling turning movements and heavy traffic flow
D. Education - traffic safety
    1. Driver education
        a. High school
        b. Adult
        c. General public
            1. Accident problem, emphasizing traffic death statistics; slogans, campaigns

IV. Traffic Unit Organization
A. Organization of a traffic enforcement department
    1. Organization chart
        a. Define each job
    2. Traffic Patrol units' purpose
        a. Motorcycle unit
        b. Automobile unit
        c. Special enforcement units
        d. Radar unit
B. Traffic safety units
    1. Bicycle safety program
    2. Junior traffic patrol
    3. National Safety Council
C. Traffic - the traffic officer and the engineer
    1. Highway and street design
    2. Complaints
    3. Road hazards (accident pictures)

V. Traffic Accident Investigation
A. Primary reasons for accidents (history)
    1. Cultural lag
    2. Driver attitudes
B. Accident investigation by traffic unit
    1. Importance (relation to other activities)
    2. Insurance (civil protection)
    3. Legislation (new laws)
    4. Enforcement (time location)
    5. Private Industry (safety glass, seat belts)

C. Reasons for prosecution
    1. Fairest type of investigation
    2. Arrest for violation (cause)
D. The foundation for traffic supervision and planning
    1. Provides records
    2. Complete information
    3. The three E's
E. An interesting activity
    1. Common judgment (First Aid - Traffic Control)
F. Accidents can be reduced
    1. They are caused (human - mechanical - act of God)
G. Investigation procedures
    1. Value of a fixed procedure
    2. Protection of life and property
    3. Gathering evidence (determination of cause)
    4. Cause and results
        a. Primary - direct - mediate cause
    5. Enforcement action

VI. Hit-and-Run Accidents
A. Basic distinction
B. Elements of hit-and-run
C. Identity of vehicle and driver
D. Follow-up by officer or office
E. Scientific aids
    1. Photography and use of camera
    2. Chemical analysis

VII. Accidents, Reports and Report Writing
A. Purpose and function
    1. Planning
    2. Results - permit checking at later date
    3. Public service
B. Safety by engineering
    1. Collision diagrams
    2. Speed studies
    3. Future design
    4. Classification of accidents and cause
C. Report writing
    1. Statements
        a. What is a statement?
        b. The use of a statement (to impeach)
        c. Assist to determine the facts
    2. How to take a statement
        a. Special techniques
        b. Information necessary in statement

VIII. Study of Speed by Skid Marks
A. Impending skid marks
B. Locked wheel skid
C. Side skid marks

D. Centrifugal skid marks
E. Formula for calculating speed by skids

1. $S = \frac{V2}{30f}$

F. Calculating the radius of a curve

EXHIBIT E

LAW ENFORCEMENT--TRAFFIC CONTROL*

GENERAL OBJECTIVE

To introduce the student to a dynamic effect on the police service of the technological development of the United States as exemplified by the invention of the motor vehicle.

SPECIFIC OBJECTIVES

1. The student should be able to elucidate on the adaptation of the police power under the U.S. Constitution to a traffic control function. In this he will be able discern between the regulatory power and the police power.

2. The student will be expected to present, in controlled essays, the diverse demands for service placed on a police officer through the traffic control function and the demands concerning his involvement in the proprietary rights of citizens in collisions. The student should be able to discuss orally and verbally the police powers as they have been evolved from the regulatory powers of the individual states.

COURSE CONTENT

I. History and Development of Traffic
   - A. First streets
   - B. Ancient Rome
   - C. Ancient Greece
   - D. Grandios events
   - E. First paved roads
   - F. Contribution of safe traffic to development of civilization

II. Traffic in the Historical Development of the U.S.
   - A. Colonial times
   - B. Pre-day civil war
   - C. Post civil war
   - D. Since 1900

III. Contribution of Traffic Capacity to War Efforts
   - A. During World War II in Europe--in Asia--value in U.S.

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*Selected from a law enforcement curriculum, Manchester Community College, Manchester, New York, 1969.

IV. Relationship of Traffic Control to U.S. Constitution
    A. Proprietary rights of citizens
        1. Accident involvement
        2. Rights of eminent domain for building roads
        3. Regulatory function as outlined by our Constitution
        4. Comparison of police power under:
            a. Regulatory function
            b. Bill of Rights and other amendments
            c. Definition of legislative from police action

V. Use of Traffic Forces to Supplement Other Police Services
    A. Use for police tactics
    B. Use for crime control
    C. Use for riot control

VI. Conflict Over Proper Agency for Controlling Traffic
    A. Police function by expedience
    B. Dichotomy as whether it should remain with police or whether other agencies should be created

VII. Elements Engaged in Traffic Control
    A. Licensing agencies
    B. Courts
    C. Entanglement of administration law with police regulatory law
    D. Prosecutors
    E. Role played by nongovernmental agencies

VIII. Administration of Traffic Control Function by the Police

IX. Traffic Enforcement Policies
    A. Accident reduction
    B. Free flow of traffic
    C. Expedite safety programs
    D. Enforcement indices
    E. Selective enforcement
    F. Traffic tolerance
    G. Lack of corrective power on part of police function

X. Traffic Enforcement Tactics
    A. Speed units
    B. Road blocks
    C. Patrol
    D. Specialized units

XI. Organization for Traffic Control
    A. Cannot be divorced from control function
    B. Accident records
    C. Planning and research
    D. Education and training

XII. Traffic Engineering (Relationship to Police Function)

XIII. The Incapacitated Driver
- A. Causes--alcohol, drugs, illness, etc.
- B. General effects of chemicals in the system
- C. As a police problem
- D. The value in other parts of the police function of such observations
- E. Alcohol test and the administration of such tests with legal implications

XIV. Traffic Research
- A. What is needed today
- B. Federal involvement
- C. Changing concepts on what an accident is
  It is part of a system rather than an isolated phenomenon.
- D. Profile of personality traits for accident prone
- E. Team approach to collision investigation

XV. Specialized Problems
- A. Increase of motorbikes and motorcycles
- B. Design of road dictated by National Defense Program rather than user need
- C. Public apathy despite mounting deaths

TEACHING TECHNIQUES

1. Lecture, class discussion, guest lecturers, and reviews of current literature.

2. Grading is based on test marks, class participation, presentation of a term project, and the preparation of a scrap book on traffic problems.

BIBLIOGRAPHY

International City Management Association. *Municipal Police Administration*. International City Managers Association.

Traffic Institute of Northwestern University. *The Accident Investigator's Manual.**

Weston, Paul. *The Police Traffic Control Function.** Charles Thomas Publishing Company.

Wilson, O. W. *Police Administration.** McGraw-Hill and Company.

*Required text.

EXHIBIT F

TRAFFIC PROCEDURES*

The Engineering Extension Service, Texas A&M University, in cooperation with The Industrial Education Service, Texas Education Agency has developed a suggested basic course outline for police administration. It is a rather thorough outline which delineates information and skills to be taught, teaching techniques and aids to be used, and sources of additional information. It is designed principally to help prepare high school students for entry into the field of law enforcement. It is intended to be completed in four and one-half months, or one semester of a school term.

The total duration of training for this course is 162 hours. A significant part (35 hours) of this course is involved with instruction in traffic procedures. The outline included here is an abbreviated form of the original outline. A much more detailed and more comprehensive outline can be obtained by acquiring the entire *Course Outline for Police Administration*. This outline only delineates subject matter content that relates specifically to police traffic services.

TRAFFIC PROCEDURES

I. Introduction to Traffic Law
   - A. Objectives of unit
   - B. Definition of traffic management
   - C. History of traffic law enforcement
   - D. Component parts of traffic law enforcement
     1. Driver
     2. Roadway
     3. Vehicles
   - E. Importance of traffic law enforcement
   - F. The problem of traffic law enforcement
     1. Accidents
     2. Congestion
     3. Fatalities
     4. Problems of coordinating all activities in the field of traffic safety
   - G. Possible solutions to traffic law enforcement problems
   - H. Tools in solving the problems of traffic law enforcement
     1. The National Highway Safety Program

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*Selected from *Police Administration: Suggested Basic Course Outline*, Engineering Extension Service, Texas A&M University, College Station, Texas, n.d., pp. 93-153.

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2. Laws and ordinances
3. Accident records
4. Education
5. Enforcement
6. Engineering
7. Motor vehicle administration
8. Public information
9. Official coordination in organized public support

II. Officer-Violator Relations
A. The task in dealing with violators
B. Principals of human behavior--behavior important in officer-violator relations
C. Violator motives
D. Police and attitudes of the violator concerning traffic law enforcement
E. Attitudes of the officer
F. Rules for talking to the violator
G. Current attitudes and procedures of the officer
1. Alertness
2. Appearance
3. Preparation
4. Courtesy
5. Knowledge of enforcement action to be taken
6. Direct and positive statements
7. Identifying every violator by requesting a driver's license
8. Writing citation or warning
9. Proper instruction to the violator

III. Techniques of Traffic Supervision
A. Traffic road checks
1. Special purposes of traffic road checks
2. Types of traffic road checks
B. Stationary traffic observation
1. Definition of traffic observation
2. Types of stationary observation
C. Open or moving patrol
1. Definition of open or moving patrol
2. Specific purposes of moving patrol
D. Miscellaneous traffic supervision techniques
1. Reports or complaints
2. Accident investigation
3. Information sources
4. State traffic code

IV. Accidents
A. Accidents involving death or personal injury
B. Accidents involving damage to vehicle
C. Duty upon striking unattended vehicle
D. Duty upon striking fixtures upon the highway or adjacent thereto

E. Accident reporting
F. Rate and speed of vehicle (Prima Facie Law)
G. Driving while intoxicated
H. Aggravated assault with motor vehicle
I. Driving while under the influence of drugs
J. Driving on wrong side of roadway--overtaking and passing, etc.
K. Turning and starting, and signals on turning and stopping
L. Right-of-way--vehicles approaching or entering intersection
M. Pedestrian's rights and duties
N. Special stops and restricted speeds required
O. Stopping, standing, and parking
P. Overtaking and passing school bus
Q. Miscellaneous rules
R. Equipment required on motor vehicles
S. When a person arrested must be taken immediately before a magistrate
T. When a person arrested is to be given 10 days notice to appear in court

EXHIBIT G

TRAFFIC COMMAND*

Each year the Continuing Education Program of the Pennsylvania State University conducts a special one-week school in Traffic Command. The school is designed for police officers with command responsibility with the rank or equivalent of sergeant or higher. Chiefs of small police departments are also eligible. Numerous professionally qualified personnel are scheduled to lecture on a series of specified topics. Many of these topics, along with a brief description of the subject content, are listed below.

THE ROLE OF THE POLICE: TODAY AND TOMORROW

A brief discussion of the changing role of the police because of the changing philosophies, interpretation of present laws, and expected change in the law.

INTRODUCTION TO SUPERVISION

A brief overview of general supervisory practices.

SUPERVISING THE LAW ENFORCEMENT ESTABLISHMENT

More specific treatment of the topic of supervision as related to a police department.

HUMAN RELATIONS AND SUPERVISION

Consideration of how to achieve high moral ethics and how to achieve cooperation and effectiveness.

SUPERVISION--PERFORMANCE AND EVALUATION OF PERFORMANCE

Methods of achieving desired performance from individuals and groups and how to evaluate it.

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*Selected from an outline of course content for Traffic Command School, Pennsylvania State University, University Park, Pennsylvania, n.d.

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SUPERVISION--POLICY EXECUTION

How to attack the difficult problem for achieving the execution of policy at various levels even though the supervisor is not in complete agreement with the policy.

SUPERVISION--PRINCIPLES OF COMMUNICATION

Effective methods of written and oral communication in an organization.

INTRODUCTION TO POLICE ADMINISTRATION

A brief overview of how to manage a police organization.

BUDGETING

An appreciation of the importance of budgeting and some suggestions as to how it should be done in a police department.

EDUCATION

A brief discussion of the part that education plays in the traffic safety program.

ENFORCEMENT

How modern enforcement policies and practices contribute to a highway safety program.

ENGINEERING

A discussion of how modern engineering practices help reduce accidents on our streets and highways.

POLICE TRAFFIC SUPERVISION

Some specific examples of the problems of supervision in a traffic division.

JUVENILE TRAFFIC OFFENDERS

Some methods of dealing with juvenile offenders and of reducing such offenses.

CASE PREPARATION AND PRESENTATION

Suggestions for methods of getting, preserving, protecting, and presenting evidence. The need for working closely with the district attorney's office in cases which involve that office.

TRAFFIC COURTS AND REPORTS

A discussion of types of records and reports helpful in reducing violations and accidents.

THE DRUGGED AND DRUNK DRIVER

Methods of coping with problems caused by alcohol and some of the new drugs.

THE FEDERAL HIGHWAY SAFETY ACT AND POLICE TRAFFIC SERVICES

A discussion of the Highway Safety Act of 1966 and benefits which may be derived by local police departments.

DISCUSSION OF PROBLEMS SUBMITTED IN ADVANCE BY STUDENTS

Each student submits a traffic problem which exists in his community or nearby.

POLICE DECISION-MAKING: A ROLE PLANNING EXERCISE

To provide the supervisor-student an opportunity to develop an understanding of the managerial decision-making process and to assist him in the implementation of analytical views for supervision and the law enforcement setting.

RELATIONSHIP BETWEEN POLICE AND NEWS MEDIA

A panel on how to work together more effectively.

EXHIBIT H

TRAFFIC PLANNING AND MANAGEMENT*

OBJECTIVES

1. To present an overview of the traffic problem as it exists today.

2. To provide an orientation concerning the responsibilities of the law enforcement officer to the traffic function.

3. To create an awareness for the need of traffic enforcement, engineering and education.

OUTLINE OF INSTRUCTION

I. History of the Traffic Problem

II. Overview of the Broad Nature of the Traffic Control Problem as it Exists Today

III. Agencies Involved in the Traffic Control Problem and the Function of Law Enforcement
   - A. Agencies involved
   - B. Three E's
   - C. Legislation

IV. The Traffic Division
   - A. Organization
     1. Tactical units
     2. Marked and unmarked cars
     3. Motorcycles
     4. Meter Maids
     5. School guards
   - B. Responsibilities
     1. Prevention of accidents
     2. Enforcement of traffic laws
     3. Administration and supervision of personnel
     4. Records, charts and graphs
     5. Planning and inspection
     6. Traffic surveys
     7. Accident investigations
     8. Follow-up investigations
     9. Public education
     10. Public support

*Selected from a law enforcement program, Department of Community Colleges, Raleigh, North Carolina, 1969.

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V. Responsibilities of Other Enforcement Units to the Traffic Function

VI. Enforcement Tactics
- A. Patrol
- B. Visible enforcement--"halo effect"
- C. Use of marked and unmarked cars
- D. Observation
- E. Use of radar
- F. Apprehensions--"professional approach"
- G. Selective enforcement
- H. Use of spot maps

VII. Allocation of Men and Materials to the Traffic Function on a Cost Basis

VIII. Evaluation of Effectiveness
- A. Enforcement index
- B. IACP ratios
- C. Previous experience

IX. Motor Vehicle Laws of North Carolina
- A. Elements of offenses
- B. Kind, degree and amount of evidence necessary to substantiate a charge

X. Collection and Preservation of Traffic Case Evidence
- A. Measurements and diagrams
- B. Written statements
- C. Photography
- D. Field notes and sketches
- E. Accident reports
- F. Scientific assistance
  1. Blood alcohol analysis
  2. Accident reconstructions
  3. Crime lab assistance
  4. Expert testimony
  5. Test skids and use of the template

XI. Rules of Evidence

XII. Analysis of Accident Data to Determine Causes

XIII. Organization and Powers of North Carolina Traffic Courts

XIV. Case Preparation and Testifying in Court

SUGGESTED TEXT

Baker, J. Stannard. *Traffic Accident Investigator's Manual for Police*. Evanston, Illinois: The Traffic Institute, Northwestern University, 1964.

SUGGESTED REFERENCES

Motor Vehicle Laws of North Carolina. The Michie Company, Charlottesville, Virginia.

Weston, Paul B. *The Police Traffic Control Function*. Charles C. Thomas, Springfield, Illinois, 1960.

DEBRIS HAZARD CONTROL AND CLEANUP

I. INTRODUCTION

Highway accidents may be the source of further damage and injuries if gasoline, chemicals, barriers torn from the roadway, fallen power lines and damaged vehicles are not immediately removed. Debris is a major cause of congestion on freeways. Likelihood of chain-reaction accidents increases where roadway lanes are blocked or restricted by damaged, partially disabled or abandoned vehicles. Prompt restoration of the accident scene to a safe condition is essential to lessen the probability of additional hazards and dangers, to relieve congestion and to assure resumption of traffic flow.[1]

In order to minimize needless highway hazards and subsequent delays, mechanisms must be provided which will assure the prompt detection, timely reporting, and expeditious removal of disabled or damaged vehicles and other articles and substances foreign to the highway environment. Personnel involved in cleanup at an accident site may include an accident site investigator, police traffic services officer, fireman, ambulance driver, emergency medical technician, and the wrecker operator. However, the latter is perhaps more heavily involved in debris hazard control and cleanup.

Highway Safety Program Standard No. 16: Debris Hazard Control and Cleanup, called for states (in cooperation with political subdivisions) to: 1) properly train and retrain adequate numbers of rescue and salvage personnel; 2) establish and implement procedures for rescue personnel to get to the scene of the accident, operate equipment effectively, extract trapped persons, detour approaching drivers, remove hazardous fuel, chemicals and other wreckage or spillage from roadways to restore safe, orderly traffic flow; and 3) develop communication systems that will provide for coordinated detection and the notification, dispatch and response to needed services.

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[1] Insurance Institute for Highway Safety, *National Highway Safety Standards* (Washington, D.C.: Insurance Institute for Highway Safety, n.d.), p. 31.

Techniques should be instituted to insure the fastest possible notification of an emergency--call boxes, aerial surveillance, patrols, closed-circuit TV, and any other feasible system. Control centers should be established, manned and equipped to send to the emergency scene people and equipment capable of providing medical care, transportation of the injured, prompt assessment of all the elements involved in the accident, and restoration of traffic movement.[2]

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[2]U.S. Congress, Report No. 1700, House of Representatives, 89th Cong., 2d sess. (Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, July 15, 1966), p. 20.

II. GENERAL SUBJECT AND PROGRAM BACKGROUND CONSIDERATIONS

It has been pointed out that numerous personnel may ultimately be involved in post-crash procedures at the scene of accidents. However, wrecker operators (also known as tow-car drivers, towmen, etc.) are more commonly cited for direct involvement in the control and cleanup of accident debris. This occupation will be considered as the primary target for occupational training.

A. OCCUPATIONAL SUMMARY (WRECKER OPERATOR)

Wrecker operators, also known as tow-car drivers and towmen, are responsible for driving wrecking equipment to the scene of accidents or where debris is to be controlled or cleaned up; removing trapped victims from wreckage; applying measures to prevent fire, explosions, and poisoning; removing wreckage by means of cables, chains, hoists, grappling devices; towing debris to a repair garage, trash dump or police impounding area; repairing (minor repairs) stalled, abandoned or disabled vehicles along the highway; maintaining records of wrecker services; and assisting in bettering communications for debris control.

Booz-Allen and Hamilton (1968) point out a need for wrecker field representatives employed by the state who would oversee operations of wrecker units on state and federal highways, consult with public and private organizations as liaison between wrecker units and localities where they are used, and organize training programs for wrecker operators.

B. MANPOWER REQUIREMENTS (WRECKER OPERATORS)

In a national survey in 1968 only 38 people were employed by the 50 states as wrecker operators in contrast to 9,229 (maximum) and 3,696 (minimum) which the survey determined were needed. The projected 1971 need (for state wrecker operators) to meet requirements of the Debris Hazard Control and Cleanup Standard, are 9,675 (maximum) and 3,882 (minimum). These figures are shown in Figure 1.

It should be emphasized that these figures represent wrecker operators employed by the states to operate wreckers on state and federal highways. The many persons employed as wrecker operators on a part-time and full-time basis in garages and service stations at the local level are not included.

FIGURE 1

ACCIDENT CLEANUP[3]

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
State Estimates	38	44	50	56	62	64	64	64	64	64
Alternative 1 (Maximum)	9,229	9,457	9,648	9,675	9,839	9,967	10,092	10,220	10,356	10,456
Alternative 2 (Minimum)	3,696	3,784	3,802	3,882	3,916	3,981	4,029	4,077	4,125	4,187

[3]Booz-Allen and Hamilton, Inc., *Safety Specialist Manpower*, Vol. I (Washington, D.C.: Booz-Allen and Hamilton, Inc., 1968), Appendix E.

C. PRESENT NUMBER OF STUDENTS ENROLLED IN PROGRAMS AND COURSES

A survey of public educational institutions and a review of literature produced little evidence of training being conducted for debris hazard control and cleanup personnel. In the fiscal year 1969 summary prepared by the Division of Vocational and Technical Education, U.S. Office of Education, programs for wrecker operators have not been officially classified. This indicates the newness of occupational education in this area and suggests that inputs must be forthcoming which will permit classifying vocational programs for wrecker operators. It further suggests that the new trend can and may in the near future see more programs regularly established under the auspices of vocational and technical education state divisions.

D. STUDENT RECRUITMENT

In order to conform with the Standard for Debris Hazard Control and Cleanup, many of those presently employed as wrecker operators on a part-time or full-time basis will need to be involved in training activities. Potential enrollees for occupational training in wrecker operations may initially come from local garage and service station establishments which currently employ such personnel. Such training would necessarily be conducted with the full support and cooperation of the employers of the wrecker operators. In accordance with the Standard, retraining for salvage and rescue personnel must be conducted on a periodic basis. The latest accident cleanup techniques will be emphasized during retraining sessions.

E. STAFFING AND STAFF REQUIREMENTS FOR TRAINING DEBRIS HAZARD CONTROL AND CLEANUP PERSONNEL

Questions arising in training debris hazard control and cleanup personnel are not unlike questions relative to staffing occupational education in other areas of highway safety. How will the instructional staff be recruited? What should the instructor know and be able to do?

Persons qualified to instruct wrecker operators may be recruited from such agencies as state highway departments, state highway patrol departments, police departments, independent garage establishments, etc. Vocational planners should involve an advisory committee in assisting in locating prospective instructors. Prospective instructors will likely be more favorably qualified for the knowledge and skills of the trade rather than in pedagogical knowledge and skills. Therefore, it may be necesary to involve potential instructors in workshops concerned

with the skills and techniques of effective teaching. Arrangements might be made to have prospective instructors sent through an instructional program on debris hazard control and cleanup offered by a national or regional highway safety organization. The material offered by such groups will supplement the knowledge and skills of the instructor. Prospective instructors will be able to observe teaching methods.

Specialists may be recruited to teach specialized course content. For example, a local M.D. could be recruited to instruct wrecker operators on the procedures for emergency medical services to victims of accidents.

III. CURRICULA FOR TRAINING DEBRIS HAZARD CONTROL AND CLEANUP PERSONNEL

Materials in the area of accident investigation have some relationship with training wrecker operator personnel. Although these materials are only generally related to the manipulative, mechanical skills involved in wrecker operations, the following subjects are generally included: types of accidents; causes of accidents; pre-scene activities; emergency activities at the scene; making out accident reports; evaluating emergency services; the law and accident investigation; personnel development (responsibility, enthusiasm, leadership, communication skills, etc.); and protection of life and property at scenes of accidents.

Curriculum materials in the area of automobile body and fender repair relate to the mechanics of extricating trapped persons from wrecked vehicles. The knowledge and skills applicable to wrecker operations can be selected from such materials and incorporated into curriculum materials for training wrecker operators.

Since wrecker operators will most likely be called upon to perform minor service and repair tasks on stalled or partially disabled vehicles, instructional programs should teach appropriate automotive service and repair methods and techniques. Adequate curriculum materials are available in automotive service and repair.

Emergency driving methods should be introduced to those training in wrecker operations, since operators will often need to rush to scenes of accidents. Curriculum materials relative to emergency medical services (ambulance driver), police traffic services and fire services contain instructional elements appropriate to training in emergency driving methods.

Wrecker operators need to know how to use the latest rescue and salvage equipment for the extrication of persons caught in wrecked vehicles and how to handle hazardous materials (radioactive, flammable, poisonous and explosive). Materials relative to these areas, particularly to the latter, are not readily available.

Advisory committees (composed of specialists in wrecker operations) should be called upon to assist in reviewing and synthesizing subject components to be incorporated into curriculum materials. It is necessary that a thorough task and occupational analysis be conducted, using the interview and/or observation technique, before comprehensive curricula for training debris hazard control and cleanup personnel can be developed.

IV. CONCLUSIONS

The following conclusions have been drawn from this unit:

A. Many of the wrecker operators employed by local service stations and garages are not trained in the latest rescue and salvage techniques. Programs for training and retraining wrecker operators are not available in sufficient numbers to meet the requirements of the Standard for Debris Hazard Control and Cleanup.

B. The duties of the wrecker operator have traditionally been limited to towing damaged or disabled vehicles and minor vehicle service and repair tasks. The role of the wrecker operator should be expanded to more closely conform to the specifications of the Standard for Debris Hazard Control and Cleanup.

C. Insufficient data is available concerning the manpower needs for debris hazard control and cleanup. No estimates exist concerning local manpower needs. (Estimates given in this report were based upon the needs for state employed personnel.)

D. Most wrecker operators are involved in debris hazard control and cleanup on a part-time basis, and perform other tasks at the place of employment, such as automotive service tasks and other service station operations.

E. Task analyses are essential to determining what competencies the wrecker operator must possess (in light of the specifications of the Standard for Debris Hazard Control and Cleanup).

V. DISCUSSION-RESEARCH TOPICS

The findings of this report raise a number of questions. It is hoped that each of the following may be carefully considered as discussion-research topics by interested persons or groups.

A. To what extent will wrecker operators be employed at the state level in the future? Will wrecker operators be employed primarily by private business establishments in the future?

B. To what extent have police traffic services officers, firemen, accident site investigators and other personnel employed in public service occupations been involved in debris hazard control and cleanup? Have methods and techniques for debris hazard control and cleanup been included in occupational instructional activities provided for these personnel? Are these materials available to vocational planners?

C. Should the initial emphasis on occupational training for wrecker operators be focused on those already employed?

D. What strategies can be applied for identifying the competencies needed by debris hazard control and cleanup personnel? What degree of difficulty would be experienced in recruiting instructors for imparting the knowledge and skills needed by debris hazard control and cleanup personnel? Would it be appropriate to recruit specialists to teach certain course content?

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DEBRIS HAZARD CONTROL AND CLEANUP

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U.S. Congress. Report No. 1700. House of Representatives, 89th Cong., 2d sess. Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, July 15, 1966.

Booz-Allen and Hamilton, Inc. *Safety Specialist Manpower*. Vol. I. Washington, D.C.: Booz-Allen and Hamilton, Inc., 1968.

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SCHOOL BUS SAFETY

I. INTRODUCTION

Approximately 18 million children in the United States depend upon school buses for transportation. One of every 393 vehicles on the road is a school bus; one of every 394 accidents involves a school bus; and one of every 556 persons injured in highway accidents is a school bus passenger.[1]

A proposed national standard for school bus safety is under development by the National Highway Safety Bureau. This standard, to be issued in 1971, and an accompanying program manual will set goals for "achieving the highest attainable level of safety in the transportation of children in school buses."[2] The standard stemmed from continuous problems in selecting and training capable school bus drivers, maintaining school buses in safe operating conditions, and establishing uniform laws, regulations and operating procedures for pupil transportation systems across the country.

State education departments promulgate, disseminate and enforce standards relative to school bus transportation, as well as provide leadership and assistance to local schools in the operation and management of school bus transportation systems.

School systems provide their own buses and/or contract with private firms for school bus transportation services. Large systems usually have full-time directors with the responsibility of overall administration of the school bus safety program. Directors of school bus transportation services are assisted by route managers, school bus foremen, school bus maintenance foremen,

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[1] U.S. Department of Transportation, *Message from the President Transmitting the Third Annual Report of the Department of Transportation on Activities Under the Highway Safety Act of 1966* (Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, 1970), pp. 102-103.

[2] *Ibid.*

school bus drivers and school bus mechanics and servicemen.[3] School bus drivers are charged with the safe transportation of school children.

Because school bus driving is a part-time occupation, many senior high school and college students, housewives and self-employed men across the nation supplement their income driving buses in the morning and afternoon. School bus drivers are often needed in other capacities to drive classes and groups on field trips, athletic events, debate meetings, school social functions, etc. As a result of the importance of school transportation, it is becoming increasingly necessary to provide some form of driver training as a prerequisite to employment and as a requirement for continuing employment as a school bus driver. Clearly specified course content and school bus driver certification requirements must be readily available to school bus driver training planners.

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[3]National Association of Counties Research Foundation, *Safety Manpower Survey of Local Governments in the United States* (Washington, D.C.: National Association of Counties Research Foundation, n.d.), p. 35.

II. GENERAL SUBJECT AND PROGRAM BACKGROUND

Information which relates to the planning, organization and management of training programs for school bus drivers is presented in the following paragraphs.

A. OCCUPATIONAL SUMMARY

Perhaps no other driving occupation carries a heavier burden of responsibility than school bus driving. Taxpayers entrust the lives of school children and expensive equipment and resources in the school transportation system.

The school bus driver is responsible for: 1) operating the school bus safely under all circumstances; 2) assuming an appropriate role for the preventive maintenance of the school bus; 3) maintaining discipline and a safe environment on the school bus; 4) handling emergency situations; 5) counseling with bus riders; 6) communicating with parents and school officials; and 7) making reports. Training of school bus drivers should include: 1) recognizing problems, moods, individual differences, handicaps of pupils; 2) knowing how to effectively deal with parents; 3) understanding the driver's role in emergency situations; 4) understanding defensive driving; 5) understanding the driver's role in relation to the efficient, economical operation of the pupil transportation system; 6) understanding the purposes of pupil transportation rules and regulations.

B. MANPOWER REQUIREMENTS

According to one source, manpower requirements for school bus drivers will rise proportionately from the national estimate of 416,768 employed in 1969 to 582,162 needed in 1978.[4] School bus drivers are, and from all appearances, will continue to be employed by public schools, and by private firms which contract for transportation services with public and private schools.

C. STAFFING AND STAFF REQUIREMENTS FOR TRAINING SCHOOL BUS DRIVERS

Many state education departments endorse the establishment of basic and refresher and/or advanced training for school bus drivers. These states recognize that drivers of school buses

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[4] *Ibid.*, Appendix E-19.

should have a high degree of safety awareness, driving skills, and teacher-like understanding of the pupils who are transported daily to and from school.

The Wisconsin Department of Public Instruction and Wisconsin Board of Vocational, Technical and Adult Education jointly sponsor an organized training program for experienced school bus drivers.

It is also recognized that qualified instructors must be available to provide school bus drivers with opportunities to develop knowledge and skills affecting their school bus driving responsibilities.

The selection of qualified instructors is the cornerstone of an effective program of instruction for school bus drivers. In the selection of an instructional staff consideration should be given to persons thoroughly familiar with the material to be presented. Teaching experience is preferred. Instructors should be able to select, organize and use effective instructional materials. It is suggested that an instructional staff, made up of a team (or teams) of teachers, be available on a full-time or alternate basis to instruct and advise bus drivers on technical and non-technical aspects of school bus transportation.

Prospective school bus drivers should be required to periodically demonstrate driving skills. Instructors will need to be available to periodically reevaluate driving. This may be effectively accomplished by trial driving or by instructors accompanying drivers on practice routes.

Personnel now involved as instructors in school bus driver training programs in the United States include directors and supervisors of school bus transportation services, driver education teachers, school principals, school bus maintenance employees, school bus manufacturers' representatives, motor vehicle inspectors, public safety directors, driver licensing examiners, and police traffic officers.

III. CURRICULUM FOR TRAINING SCHOOL BUS DRIVERS

A number of materials relative to school bus driver training are available today. The design and form of the materials are based upon the instructional settings in which materials will be used at universities, community-junior colleges and other public educational institutions. The instructional activities may be in the form of seminars, institutes, and workshops during the summer months. Training may be provided through short courses conducted by an itinerant instructor employed by the state education department. Utilizing a mobile unit (specially equipped school bus), an itinerant instructor might provide bus driver instruction at school bus maintenance shops, or at vocational-technical education facilities, and thereby reach a large number of drivers during the course of a year.

Available materials relative to school bus safety exist in three forms: 1) handbooks designed primarily for self-instruction rather than for use in systematic training courses; 2) reference materials on bus standards, rules and regulations for use by school bus administrators, drivers and maintenance foremen; and 3) instructor's manuals for use in organizing and managing training programs.

Of particular note in this regard is the State of New York where notable progress has been made in the promotion of school bus safety through development of a school bus drivers' instruction manual. A section of this manual includes "Suggestions for Organizing a Course for School Bus Driving" which are included in Exhibit A in the appendix.

It is generally recognized that preservice and in-service training should be made available. A few states have advanced programs of instruction.

As a total picture, notable progress has been made in the training of school bus drivers although many hundreds continue to drive who have had no systematic training.

Exhibit B in the appendix represents a synthesis of preservice and in-service curricula elements from several states for school bus driver education. Program planners may or may not include the same elements in both types of instructional activities. Generally speaking, in-service training should focus on problems encountered by bus drivers since the last preservice training session. The authors suggest that instructional activities for in-service training include review of problem areas, role playing, case studies, and specific needs of experienced drivers based on surveys and interviews.

IV. EVALUATING SCHOOL BUS DRIVER PERFORMANCE

In a comprehensive program of school bus driver training, the student driver is given an opportunity to practice the driving techniques outlined in classroom instruction. The practices should be conducted under close supervision and guidance so that the student driver may reach the required level of proficiency in the handling of school buses. Supervised practice is essential in the training of personnel without previous experience in the operation of school buses.

Initial driver training exercises may be conducted in an area free from traffic, and therefore, affording a means of training and testing drivers with a minimum of risk to equipment, trainees, and other users of the highway. Basic maneuvers can be mastered to enable the school bus driver to cope successfully and safely with common driving problems. Problems may be developed to simulate special conditions which drivers may encounter or which may be causing a disproportionate share of accidents. If insufficient space is available for setting up a complete activity course, one problem at a time can be set up.

Driver scores should be recorded for each training exercise. National and local transit systems (i.e., National Trailways Bus System and The Chicago Transit Authority) have developed extensive programs for evaluating the performance of bus drivers. (There are also other instructional materials available from such organizations.) Evaluation instruments may be obtained by corresponding with these organizations.

Student drivers must also be provided with driving experiences under actual operating conditions and evaluated upon their overall ability to handle vehicles under the complex conditions found on school bus routes.

Test driving under actual driving conditions provides a check of the student driver's attitude toward instruction, traffic laws, basic defensive driving rules, users of the highway, and law enforcement officers.

The most complete check of the student driver's ability to perform as an expert school bus driver can be accomplished by having the trainee practice driving the school bus route to be assigned to him. This activity affords the student driver an opportunity to put into practice everything he has learned. An instructor would ride with the student driver to evaluate his overall performance.

V. CONCLUSIONS

The following conclusions have been drawn from this unit:

A. Since a standard for school bus safety has not been promulgated, it is not possible to presume what specific impact such a standard will have on training school bus drivers. However, there is a demonstrated need for systematic preparatory and in-service school bus driver training. Additional resources are needed to provide instruction to the large number of new drivers employed each year.

B. There seems to be a trend for state divisions of vocational and technical education to be asked to assist in planning, organizing and conducting programs of instruction for school bus drivers.

C. New drivers should perfect skills unique to the operation of a school bus before they are permitted to transport students.

D. Materials relative to school bus driver training are available in various forms from state departments of education. These materials include driver handbooks, learners' manuals, guides for driver training instructors, school bus standards, rules, and regulations. Although these materials were not designed for teaching, much of the contents may be adapted for programs of instruction.

E. These materials are a base for developing curricula for school bus driver training programs. An outline of curricula elements is in the appendix.

VI. DISCUSSION-RESEARCH TOPICS

The findings of this study raise a number of questions. It is hoped that the following may be considered as discussion-research topics by interested groups or individuals.

A. What specific tasks may be delegated in the future for training school bus drivers? What coordination problems are evident between state education divisions charged with the responsibility of training school bus drivers (i.e., school bus transportation division, and vocational-technical division)? How can these problems be resolved or minimized?

B. Are practice driver experiences often provided to beginning school bus drivers? What methods can most effectively be applied to provide practice driving experience?

C. How might prospective substitute drivers be motivated to enroll in preparatory or in-service school bus driver training?

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APPENDICES

EXHIBIT A

SUGGESTIONS FOR ORGANIZING A COURSE FOR SCHOOL BUS DRIVERS*

The following are suggestions for conducting a course for school bus drivers:

1. The selected meeting place should be accessible for participants.

2. No class should include more than 35.

3. The course should meet for at least 10 two-hour sessions or a minimum total of 20 hours.

4. A local school official should serve as general chairman in setting up the program.

5. School personnel with teaching experience should serve as instructors and preside at each meeting.

6. Teachers of high school driver education courses should assist in units which relate to driving skills and driving tests.

7. The school physician, school nurse, state police, sheriff's office, local police, head school bus driver, and the school bus mechanic should be consulted in planning the course.

8. Instructors should refer to and make use of the school business management news publication.

9. Five or six parents should be invited when the school bus driver's relationship to parents and pupils is taught. These parents should be notified in advance why they have been asked to attend and what contributions they may offer.

10. All new drivers should be required to take the course as soon as possible. Several schools in the area should be asked to contribute instructors and resources.

11. Men and women should be encouraged to attend who plan to become either substitute or regular drivers. Men teachers

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*Selected from *Manual for the Instruction of School Bus Drivers* (Albany, New York: The University of the State of New York, The State Education Department, 1966), p. 8-9.

should be encouraged to take this course for possible emergencies and the district superintendent and principals should attend to emphasize the importance of this type of training. The State Education Department should issue certificates upon completion of all course work.

12. A refresher course offered every year to two years should emphasize: 1) the responsibilities of the school bus driver; 2) driver qualifications--physical and psychophysical testing; 3) driving skills; 4) accidents, first aid and school bus health and sanitation; and 5) traffic laws, signs and signals.

EXHIBIT B

(A SYNTHESIZED OUTLINE OF CURRICULA ELEMENTS)

I. General Aspects of the School Bus Safety Program
   A. Overview of the school bus safety program
      1. Significance and scope
      2. Objectives and philosophy
      3. Administration
         a. State
         b. Local
      4. Agencies and institutions involved in the school bus safety program
         a. State Education Department
         b. Colleges and universities
         c. Secondary school systems
         d. Public safety departments
         e. Motor vehicle administration
         f. State and local police departments
         g. Other
   B. National trends in pupil transportation
      1. School transportation services
      2. School bus design
      3. School bus equipment
   C. The U.S. Department of Transportation's role in school bus safety

II. Driving Orientation
   A. Qualifications for school bus drivers
      1. Physical qualities
      2. Mental and emotional qualities
      3. Character traits and habits
      4. Eligibility rules for driver certification
      5. Driver licensing
   B. School board responsibilities
   C. School administrator's responsibility
   D. School bus transportation supervisor's responsibility
   E. School bus route layout
      1. Factors to consider in route layouts and schedule planning
         a. Age, health and physical condition of students
         b. Condition of the road to be traveled
         c. School schedule
         d. Distances between homes and school bus routes
         e. Safety of walking routes between homes and school bus
         f. Number and sizes of buses available
         g. Number of pupils
      2. Factors to be considered in making the time schedule

a. The number of routes for each bus
b. Type of highway, its condition and volume of traffic
c. School schedule
d. Size of school bus
e. Number of pupils
f. Walking distance of the pupils

F. Requirements for extra-curricular or non-routine use of school bus

G. School bus driver reporting procedures
1. Daily reports
2. Weekly reports
3. Annual reports
4. Motor vehicle accident report
5. School bus discipline report

III. Pupil Control

A. Pupil differences
1. Physical
2. Social
3. Intellectual
4. Emotional
5. Environmental background
a. Home
b. Economic
c. Ethnic
6. Recognizing differences
7. The special child
a. Parent responsibility
b. Various types of handicaps
c. Vehicle requirements
d. Bus driver responsibilities

B. Discipline and behavioral problems
1. Pupils' responsibility to the school and the bus driver
2. School bus driver's responsibility to pupils
3. Characteristics of a well disciplined bus
a. Lack of understanding/consideration
b. Lack of uniformity/consistency
c. Lack of fairness/firmness
d. Lack of communication
e. Lack of maturity
4. Accepted forms of disciplinary action

IV. Public Relations

A. The school bus driver and the parents
1. Importance of parents understanding school bus transportation responsibility
2. The bus driver image
3. Establishing a relationship with parents
4. Time schedules
5. Effective communication

B. The school bus driver and school officials
    1. Common personnel problems
        a. Communication
        b. Cooperation
        c. Mutual respect
    2. Board of Education
        a. Board of Education powers and duties
        b. School bus driver's responsibility to the Board of Education
    3. Superintendent
        a. Superintendent's powers and duties
        b. School bus driver's responsibility to the superintendent
    4. Principal
        a. Principal's powers and duties
        b. School bus driver's responsibility to the principal
    5. School bus transportation supervisor
        a. Supervisor's powers and duties
        b. School bus driver's responsibility to the supervisor
    6. Relationship with teachers
    7. Relationship with other bus drivers
C. The school bus driver and the community
    1. Courtesy
    2. Alertness
    3. Observing local and state laws and regulations on the highways

V. Driving
A. Driving tests
    1. Physical
        a. Vision
        b. Hearing
        c. Disabilities
            (1) Temporary
            (2) Permanent
        d. Muscular stability and strength
    2. Mental condition and personal habits
        a. Character references
        b. Mental and emotional stability
        c. Use of alcohol and drugs
        d. Cleanliness of mind and body
    3. Psychophysical
        a. Visual acuity
        b. Field of vision
        c. Color blindness
        d. Night vision
        e. Depth perception and distance judgement
        f. Reaction time
        g. Steadiness of hands and eyes

B. Driving fundamentals
    1. Starting engine
    2. Shifting gears
    3. Double clutching
        a. Up shifting
        b. Down shifting
    4. Braking
    5. Steering
    6. Starting and stopping
    7. Stopping at railroad crossings
    8. Speed limitations
    9. Turning
    10. Backing
    11. Parking
    12. Rounding curves
    13. Passing
    14. Following other vehicles
    15. Entering the main highway
    16. Loading and unloading pupils
C. Special driving conditions
    1. Driving in rain
    2. Controlling skids
    3. Running off roadway
    4. Driving on wet pavement
    5. Driving in fog
    6. Driving on rough and muddy roads
    7. Driving on ice and snow
D. Traffic laws
E. Traffic control devices

VI. Safety and Emergency Procedures
A. Planning for emergency situations
B. Where accidents may occur
C. Causes of accidents
    1. Mechanical breakdown
    2. Accidents caused from traffic conditions
    3. Accidents caused from roadway conditions
    4. Accidents caused from driver faults
D. Responsibilities of school bus drivers in case of accidents
    1. Stopping the bus
    2. Getting the attention of pupils
    3. Evacuation procedures
        a. Orienting pupil helpers
        b. Training pupils for emergency evacuation
            (1) Front door evacuation
            (2) Rear door evacuation
    4. Use of emergency equipment
        a. Warning devices (flares, flags, reflectors)
        b. Fire extinguisher
        c. Wrecking bar
        d. First aid kit

5. Protection of the scene of accident
6. Accident reporting

E. Emergency medical services
1. Maintaining first aid equipment
2. Obtaining emergency medical assistance in case of accidents
3. First aid procedures
a. Bandaging
b. Preventing heavy loss of blood
c. Maintaining breathing
d. Treatment for wounds
e. Treating for bone injuries
(1) Spine or neck
(2) Fractures
f. Head injuries
g. Treatment for shock
h. Common illnesses
(1) Eye injuries
(2) Vomiting
(3) Fainting
i. Moving the injured

VII. School Bus Maintenance
A. The driver and the maintenance program
1. Driving habits
2. Reports
B. Areas of responsibility
1. Tires
2. Brakes
3. Clutch
4. Steering mechanism
5. Battery
6. Lights
7. Windshield wipers
8. Windows
9. Rearview mirrors
10. Operator's seat
11. Emergency door
12. Horn
13. Exhaust system
14. Signs
15. Oil and water
16. Ice and frost on windows
17. School bus sanitation

VIII. State and Federal Pupil Transportation Rules, Regulations and Specifications
A. School bus chassis
B. School bus body
C. School bus capacity

D. Special chassis for handicapped children
E. Standard equipment
F. Motor vehicle inspection
G. Liability insurance
H. Regulations governing the use of the national system of interstate and defense highways
I. Loading and unloading procedures
J. Special school bus driving procedures
K. Special traffic regulations

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EVALUATION

Please complete the following regarding the unit you have just completed. Your ratings and comments should be concerned with the substantive content presented.

Since this assessment is of importance to the project, please complete and return this form as soon as conveniently possible.

DIRECTIONS: On the scale provided please rate each section in this volume. A rating of 1 indicates the section was inadequate. A rating of 4 indicates that the section was adequately presented. Space is provided after each item for any comments or questions. These comments and/or questions could be, but are not necessarily limited to, the strengths and/or weaknesses of each section.

1. Traffic Control Devices — Inadequate 1 2 3 Adequate 4

   COMMENTS:

2. Pedestrian Safety — 1 2 3 4

   COMMENTS:

3. Police Traffic Services — 1 2 3 4

   COMMENTS:

		Inadequate			Adequate
4.	Debris Hazard Control and Cleanup	1	2	3	4
	COMMENTS:				
5.	School Bus Safety	1	2	3	4
	COMMENTS:				